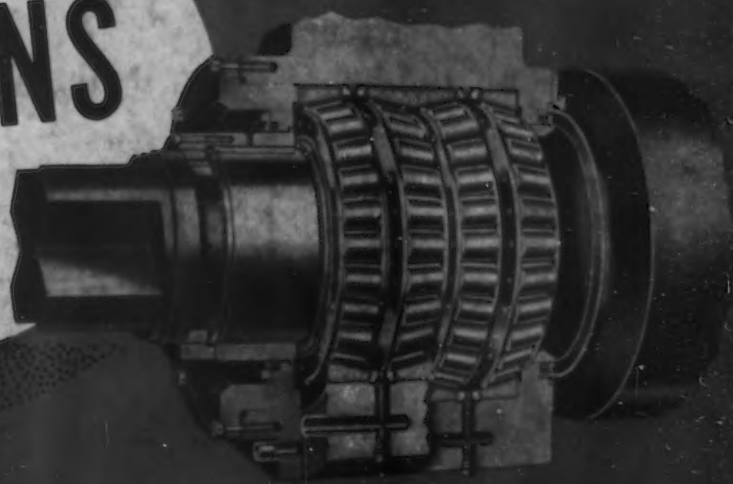


AUGUST 19, 1937

# THE IRON AGE

LIBRARY  
WEST VIRGINIA UNIVERSITY  
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THE FIRST  
**500,000 TONS**  
TELL THE STORY



TIMKEN Bearings have raised the standards of roll neck bearing endurance and life so high that the most profitable period of bearing service begins after a half million tons have passed through the mill rolls. TIMKEN Roll Neck Bearings

have rolled nearly 4 times this tonnage—upwards of 1,700,000 tons—with the bearings still good for thousands more. It will pay you to consider tonnage records when selecting roll neck bearings for new or existing mills.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO



'Rebel' Streamliners of the Gulf, Mobile & Northern R. R. are Timken-equipped.

GLIDE—as you ride a Timken-equipped train

Manufacturers of Timken Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; Timken Alloy Steels and Carbon and Alloy Seamless Tubing; Timken Rock Bits; and Timken Fuel Injection Equipment.

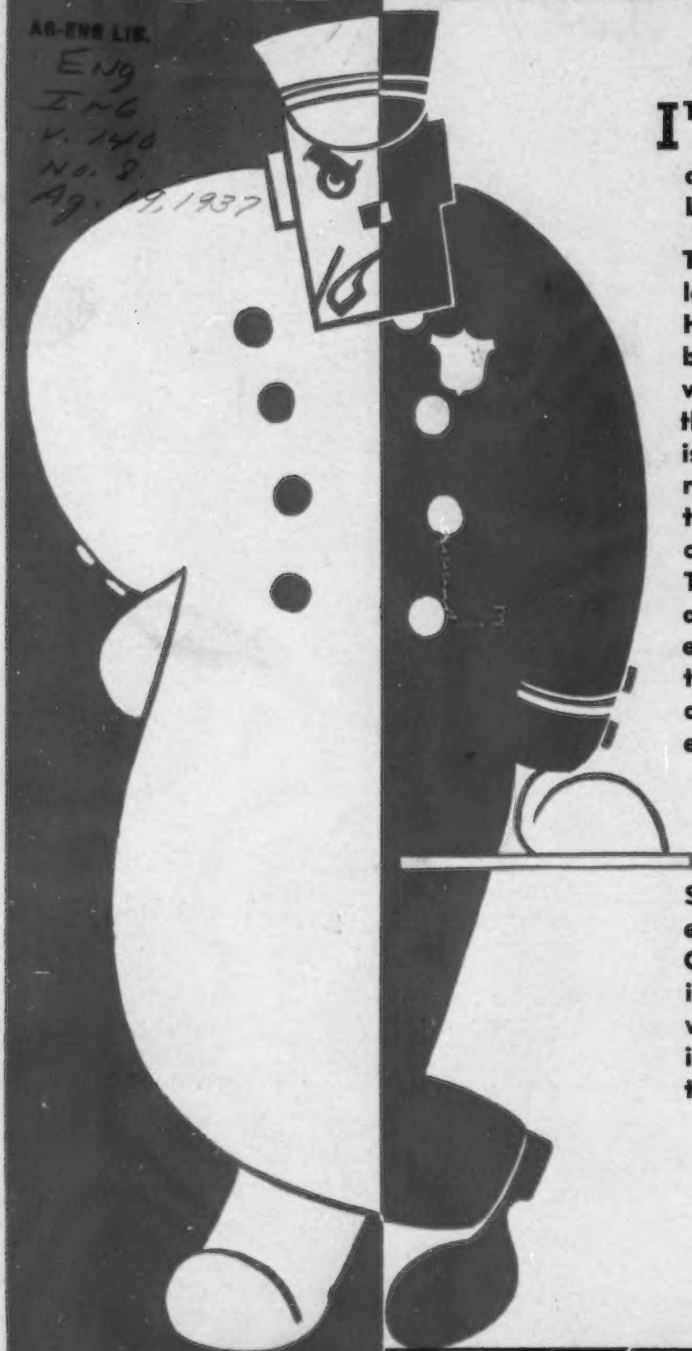
# TIMKEN

**TAPERED ROLLER BEARINGS**

# OH YEA? ★ ★ ★

AG-ENG LIB.

ENG  
IMG  
V. 140  
No. 8  
Aug. 19, 1937



**I**T'S OFTEN a good thing to question the validity of long-held opinions. So, let us talk about pyrometer accuracy, in relation to Lead Wires.

The composition of so-called "compensating" leads differs from that of the thermocouple. Hence, where the two join in the connector-block, they form a thermoelectric junction, which becomes a source of possible error. If the connector-block is merely warm, the error is not vital. But this block often gets very hot, resulting in larger e.m.f.'s, which either add to or subtract from the e.m.f. of the couple, causing erroneous temperature indication. These errors are of such possible amplitude as to cause the owners of the largest pyrometer installations to standardize on lead wire that has the same composition as that of the couple—thus eliminating the above source of error.

★ ★ ★

So, the largest pyrometer installations are equipped with Chromel-Alumel leads and Chromel-Alumel couples — for accuracy. And if accuracy of temperature is vital to you, we invite you to get the whole story by asking us for Folder G1 . . . . . Hoskins Manufacturing Co., Detroit, Mich.



# Hoskins

## CHROMEL-ALUMEL LEADS AND COUPLES

2—THE IRON AGE, August 19, 1937

THE IRON AGE, published every Thursday by the CHILTON CO. (INC.). Publication Office, Chestnut & 56th Sts., Philadelphia, Pa. Editorial and Executive Offices, 239 W. 39th St., New York, N. Y. Entered as second class matter November 8, 1932, at the Post Office at Philadelphia under Act of March 3, 1879. \$6.00 a year in U. S., Canada \$8.50. Foreign \$12.00. Vol. 140, No. 8.



# Why VisControlled steels



*are better for machining*

**A** FUNDAMENTAL requirement for good machining steel is that it be as free as possible from elements which tend to produce so-called gumminess.

An outstanding advantage of steel made under VisControl, an exclusive Bethlehem process, is freedom from gumminess, for this reason:

Technical considerations require that all steel be deoxidized to some extent before it can be cast into ingots. Unfortunately, the elements used in this deoxidation are detrimental to machinability—and unless used in least possible amounts will noticeably affect the steel.

With VisControl, two steps—oxidation in refin-

ing steel and subsequent deoxidation—are under more complete control than has ever before been possible. Oxidation can consistently be held to the minimum permissible for the grade and quality of steel being made—an achievement practically impossible in usual steel-making practice. As a result, with oxidation held to narrow and well-defined limits, Bethlehem is able to use smaller and more exact amounts of deoxidizing agents.

In actual practice, VisControl has enabled Bethlehem to cut certain deoxidizing additions from 500 and 600 pounds per heat to as little as 100 pounds. The inevitable result is steel better for machining.



## BETHLEHEM STEEL COMPANY

# PROGRESS

IN MANUFACTURING DRILLS AND REAMERS

**TEST RECORD**

TERRITORY New York

REPORT OF TEST AT The Blank Bl

TEST REQUESTED BY Salesman

DEALER

SIZE 1/2" LIST #940

MATERIAL Offset Pol

MACHINE

DATE 10/26/36

DRILL NO.	GRIND 1	GRIND 2	GRIND 3	GRIND 4	GRIND 5	GRIND 6	AVERAGE HOLES PER GRIND
1	76	49					
2	74	6					
3	54						
4	61						
5	79						
6	54						
7	54						
8	54						
9	54						
10	54						
11	54						
12	54						
13	47						
14	54						
15	41						
16	56						
17	41						
18	59.6						
19	45						
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21	32						
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95	35						
96	52						
97	47						
98	55						
99	47						
100	21						

## Who Tests Your Drills and Reamers?

• The greater the care a manufacturer takes in systematically testing his own cutting tools, the more certainly can he depend upon the precision and accuracy of the drilling and reaming they do. But with all of industry's *wishing* for exactly correct drills and reamers, only about one concern out of five is prepared to make exhaustive plant tests for itself.

But still there's good news for the thousands upon thousands that make up the other four, because all of "Cleveland's" facilities are available to

help you obtain the right tools for your exact needs. No tests could be more searching, thoroughgoing, exacting, than those conducted daily in the "Cleveland" plant. Come here with your problems, then, whether you have or have not shop test facilities of your own.

Sixty years' successful experience is yours through a "Cleveland" Representative near you. He will gladly call at your request through your regular source of supply, or directly to the Home Office.

The **CLEVELAND** TWIST DRILL COMPANY  
 1242 EAST 49<sup>th</sup> STREET  
 CLEVELAND

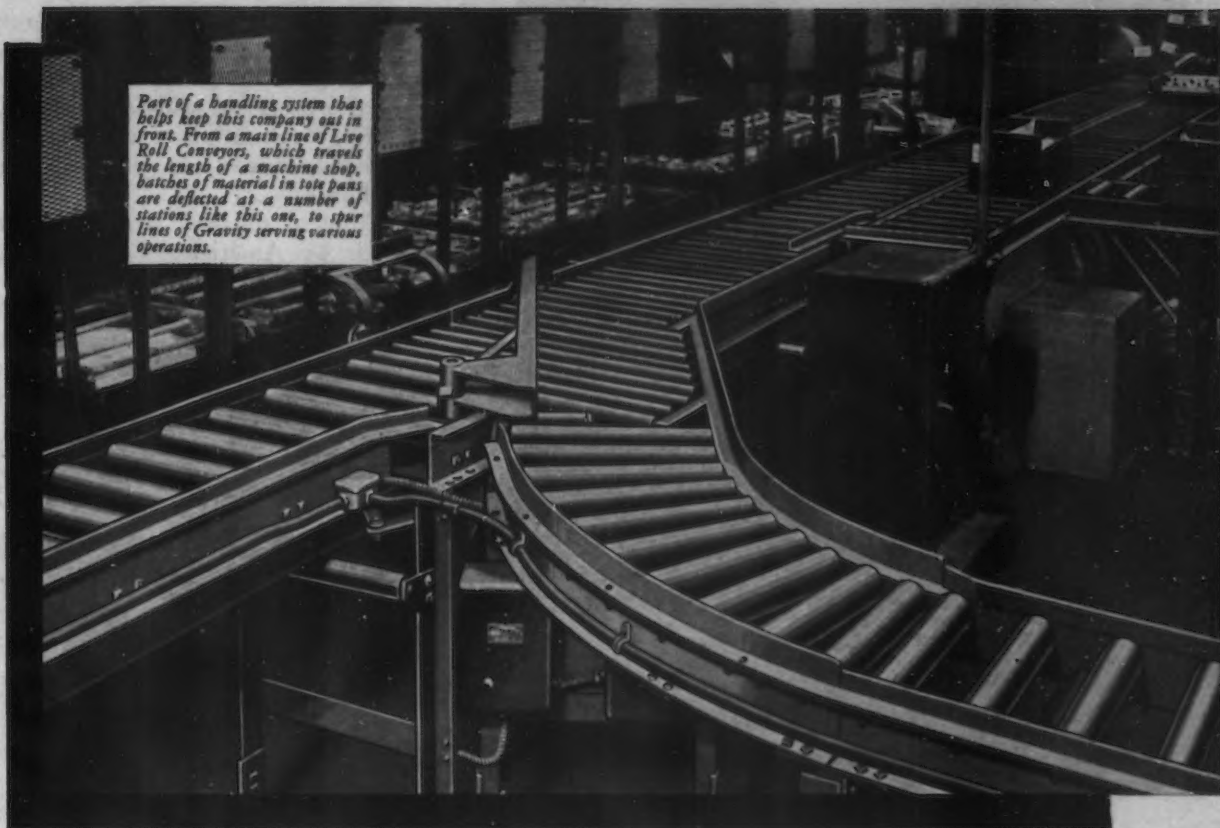
TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

30 READE ST. NEW YORK 9 NORTH JEFFERSON ST. CHICAGO 654 HOWARD ST. SAN FRANCISCO  
 6515 SECOND BLVD. DETROIT LONDON • E. P. BARRUS, LTD. • 35-36-37 UPPER THAMES ST. E.C.4



"CLEVELAND" DISTRIBUTORS EVERYWHERE ARE READY TO SERVE YOU





Part of a handling system that helps keep this company out in front. From a main line of Live Roll Conveyors, which travels the length of a machine shop, batches of material in tote pans are deflected at a number of stations like this one, to spur lines of Gravity serving various operations.

# GETTING THERE ★ ★ ★ ahead of competition



Final unit of main Live Roll line illustrated above. Finished product is deflected at convenient intervals to storage area.

"STAYING out in front" of competition is becoming more and more a matter of diagnosing trends in *cost-cutting production equipment*—putting into practice developments for saving Time, Effort and Space as soon as they become obviously worthwhile. . . . In short, keeping ahead is thinking ahead of your competitor. Is your plant as "conveyorized" as it should be for efficient, economical operation? Right now, in 1937-38, no field holds more money-saving possibilities than that of materials handling. To get the edge on competition, now is the time to act. . . . The nearest Logan engineer is at your service with a host of practical ideas to cut costs of operation, or write for bulletin "7 Economies."

LOGAN CO., Incorporated,  
545 Buchanan St., Louisville, Ky.

MOVING IS  
90%  
OF MAKING

# Logan Conveyors

LOUISVILLE



# STURDY ARCHES OF STEEL *enhance* BALTIMORE BRIDGE

STRUCTURAL steel's adaptability to esthetic treatment is again shown by the Guilford Avenue Bridge in Baltimore. These new twin spans, of the 3-hinged tied-arch type, replace an old bridge consisting of two Warren-type trusses with cast iron top chords and eyebar bottom chords.

The complete finished structure was contracted for by American Bridge Company. This included fabrication and erection of all structural steelwork, construction of concrete substructure, piers, roadway and sidewalk decks and railing—as well as removal of the old structure. This was satisfactorily carried out under the hazards of uninterrupted train traffic on the electrified system below.



THESE ARCH SPANS measure 174 feet between end bearings and carry a 40 foot roadway with two 5 foot, 8 inch sidewalks supported on cantilever brackets.

THE ROADWAY is asphalt planing laid on steel flooring of interlocking channels welded to the superstructure. Notice the sidewalk guard fence of ornamental steel railing with plate glass panels to protect pedestrians from the railroad electrification wires below.

Built by Maryland State Road Commission for City of Baltimore under direct supervision of H. E. Tabler, Chairman, Nathan L. Smith, Chief Engineer, and Walter C. Hopkins, Bridge Engineer. Design developed by Engineering Department of the City of Baltimore, B. L. Crozier, Chief Engineer and H. F. Lucke, Jr., Associate Engineer.

## AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

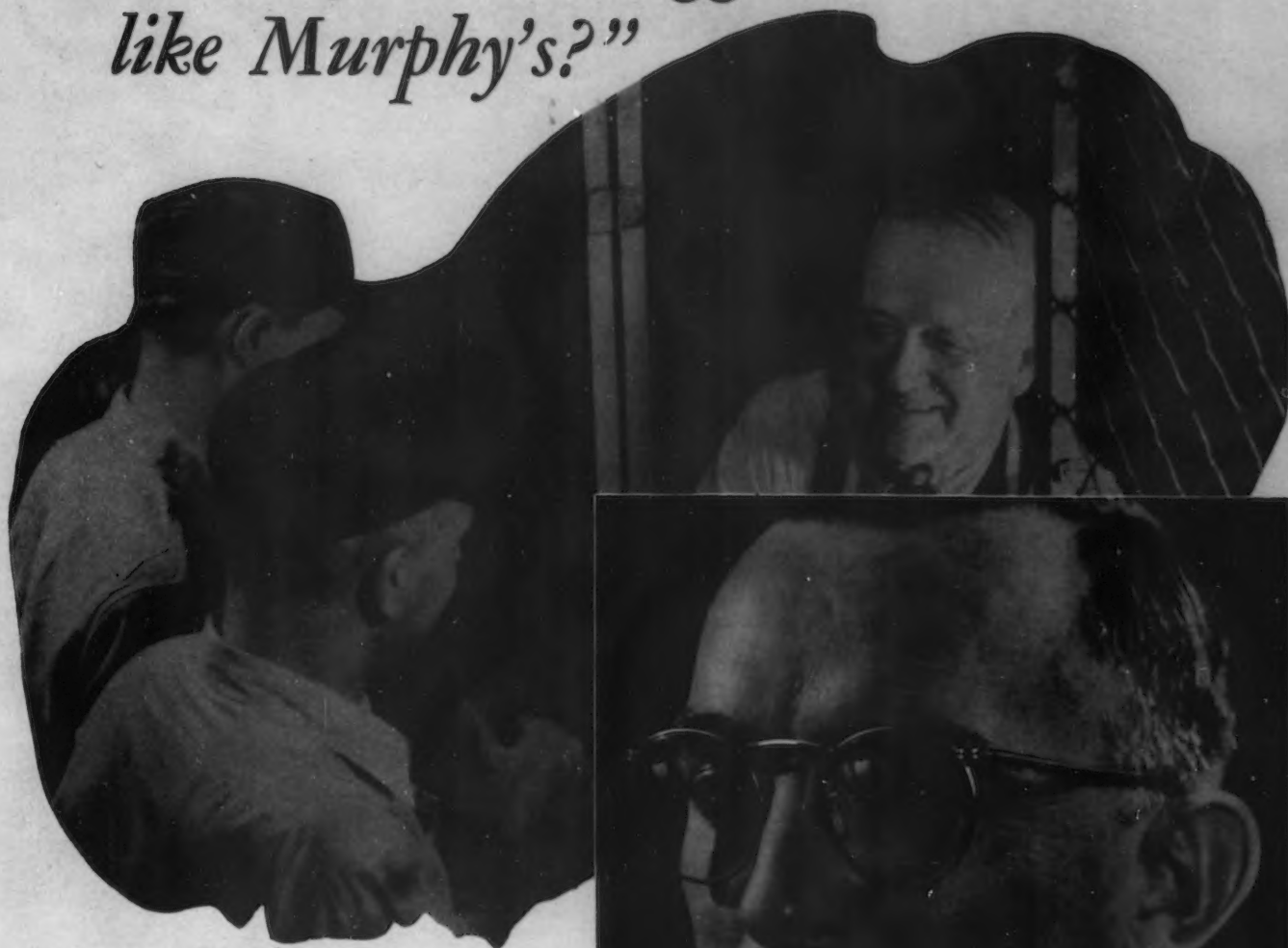


Baltimore • Boston • Chicago • Cincinnati • Cleveland • Denver • Detroit  
Duluth • Minneapolis • New York • Philadelphia • St. Louis

Columbia Steel Company, San Francisco, Pacific Coast Distributors • United States Steel Products Company, New York, Export Distributors

# UNITED STATES STEEL

"Got any more Goggles  
like Murphy's?"



### ...an actual case on record\*

When a pair of tough ironworkers step up to the storekeeper and *ask* for goggles — *that's news*. Especially in a plant where there had always been a "sit-down" on efforts to enforce eye-protection.

But one man in the shop was asked to try a pair of Ful-Vues. He tried them on . . . *kapt them on*. And before quitting time there were two more requests for "goggles like Murphy's." Others followed, and now AO Ful-Vues are worn voluntarily throughout the plant. Ful-Vues give workers a new slant on goggles. For they are light, comfortable, and just as good-looking as the famous Ful-Vue spectacles for white-collar wear. They rest easily on the face — and the high-up endpieces remove obstructions to side-sight . . . remove the objectionable sense of wearing "blindners."



The new F-3100 Ful-Vue Goggle is as cool and comfortable as the most popular type of glasses for street wear. High-up endpieces permit full vision at the sides . . . pivoting nose pads are self-adjusting . . . 6-Curve Super Armorplate Lenses (patented) have far greater strength than most standard lenses.

Patented

Ful-Vue Goggles may give you, likewise, a new slant on your own eye-protection problems. Find out. Call in your neighbor, the American Optical representative — and talk the matter over with him.

\*Copy of this company's letter describing their experience with Ful-Vue Goggles will be sent on request.



## AMERICAN OPTICAL COMPANY

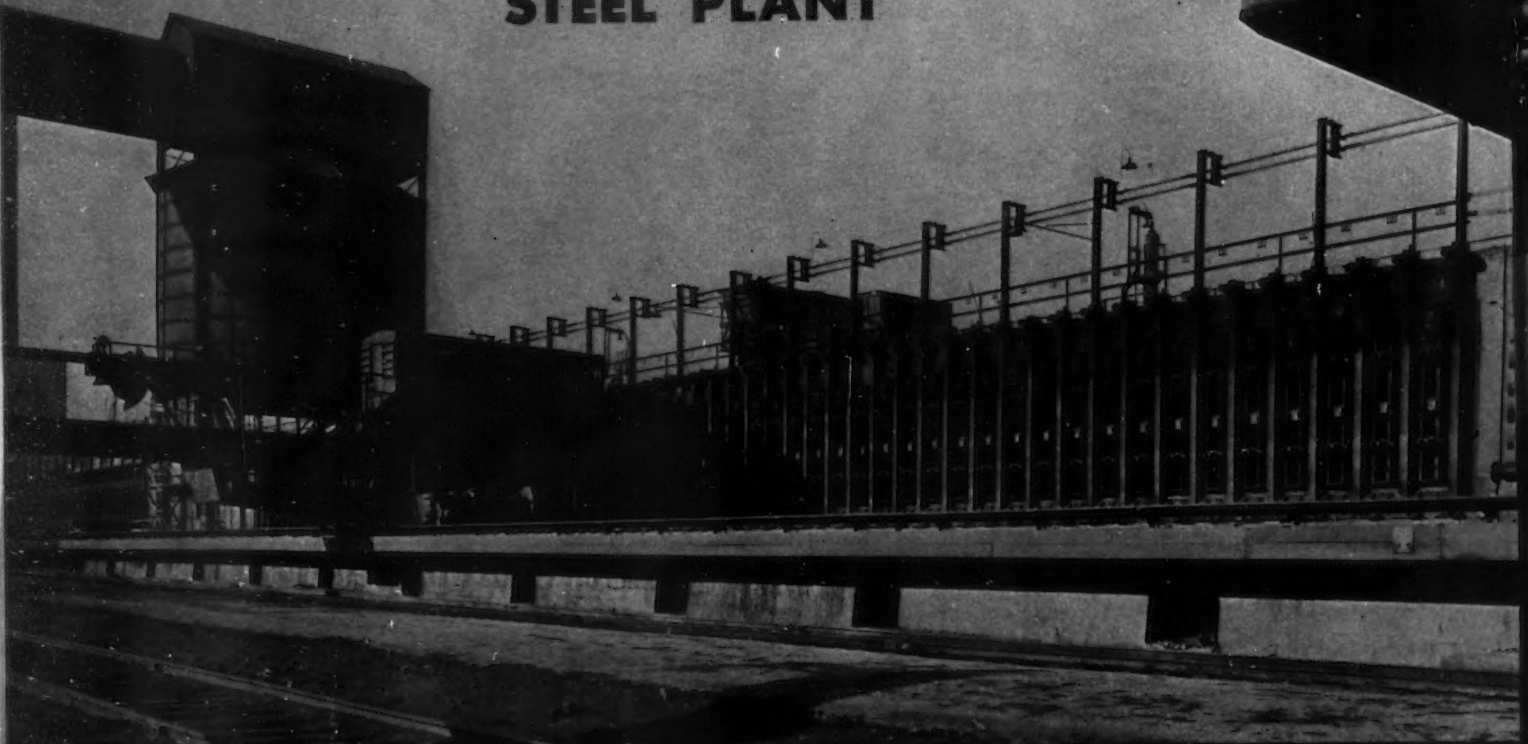
Manufacturers, for more than 100 years, of products to aid and preserve vision. Factories at Southbridge, Mass. In Canada, Consolidated Optical Co., Ltd. Branch Offices in all principal industrial centers.

3909

THE IRON AGE, August 19, 1937—7



# 974 KOPPERS COKE OVENS WERE BUILT FOR THE WORLD'S LARGEST STEEL PLANT

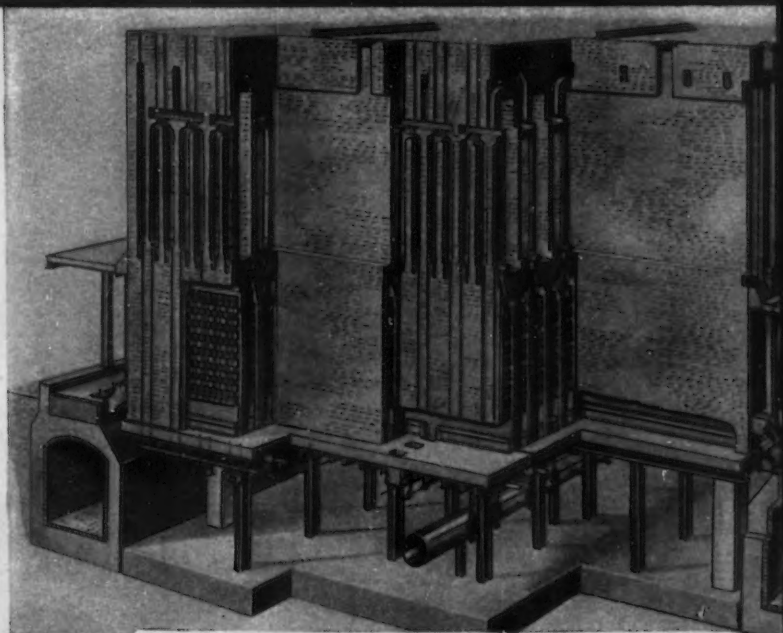


# KOPPERS

One hundred and thirty-eight of these are Koppers Becker Underjet Ovens. Illustrations of these ovens are shown here.

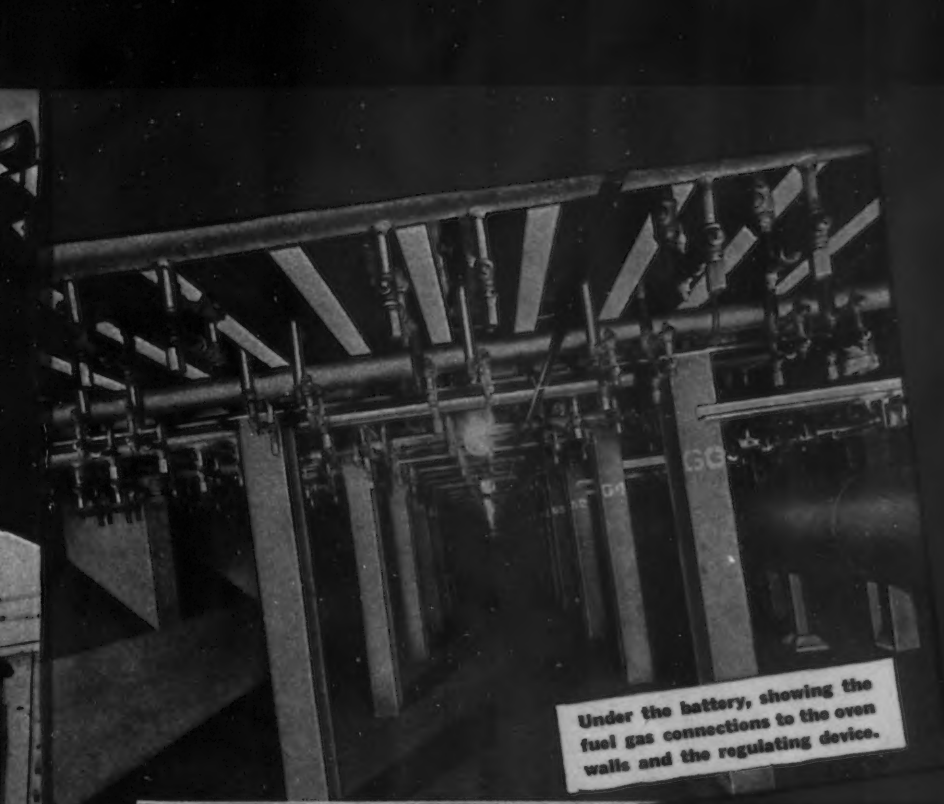
The Koppers Becker Oven produces the highest quality and quantity of coke, gas and other products of coal carbonization; it permits the use of blast furnace or producer gas, as well as oven gas for oven heating.

Koppers Becker Ovens can be built to any desired size within reasonable limits. We welcome an opportunity to confer with you on your plans.



Cross-sectional view of the Koppers Becker Underjet Ovens.





Under the battery, showing the fuel gas connections to the oven walls and the regulating device.



View of the battery above, showing walls and regulating device.



The valve in this fuel gas piping at the world's largest steel plant was made by the Western Gas Division of Koppers Company.

### *Koppers Divisions, Subsidiaries and Affiliates Serving the Metal Industries*

ENGINEERING AND CONSTRUCTION DIVISION	PITTSBURGH, PA.
KOPPERS-RHEOLAVEUR COMPANY	PITTSBURGH, PA.
BARTLETT HAYWARD DIVISION	BALTIMORE, MD.
TAR AND CHEMICAL DIVISION	PITTSBURGH, PA.
WESTERN GAS DIVISION	FORT WAYNE, IND.
AMERICAN HAMMERED PISTON RING DIVISION	BALTIMORE, MD.
GAS AND COKE DIVISION	PITTSBURGH, PA.
THE KOPPERS COAL COMPANY	PITTSBURGH, PA.
NEW ENGLAND COAL & COKE COMPANY	BOSTON, MASS.
THE WOOD PRESERVING CORPORATION	PITTSBURGH, PA.
NATIONAL LUMBER & CREOSOTING COMPANY	TEXARKANA, ARK.
THE WHITE TAR COMPANY OF NEW JERSEY, INC.	KEARNY, N. J.
THE MARYLAND DRYDOCK COMPANY	BALTIMORE, MD.

### *Koppers Products Serving the Metal Fields*

Coke Oven Plants . . . Conveying Systems . . . Liquid Purification Plants . . . Oxide Purification . . . Phenol Removal Plants . . . Benzol Recovery Plants . . . Ore Concentration Plants . . . Sulfur Recovery . . . Water Gas Plants . . . Tar Displacement Systems . . . Tar Extractors . . . Fast's Self-aligning Couplings . . . D-H-S High Tensile Bronze Castings . . . Iron Castings . . . Coal . . . Coal Tipples . . . Coal Washing Plants . . . Coal Drying Plants . . . Coal De-dusting and Dust Collecting Equipment . . . Coal Crushing Plants . . . Coke . . . Steam Accumulators . . . Barges . . . Ships . . . Blast Gates . . . Gas Holders . . . Charging, Clinker and Clean-out Doors . . . Gas, Air and Water Valves . . . Drydocking Facilities . . . Cylinder Packing . . . American Hammered Piston-Rings . . . Waterproofing and Dampproofing Materials . . . Roofing Materials . . . Tarmac for plant paving . . . Bituminous-base Paints . . . Lumino Paint . . . Rolling Mill Bronze . . . Treated Timber . . . Disinfectants . . . Insecticides . . . Deodorants . . . Fire Hydrants

### **IMPROVEMENTS in the Koppers Becker Ovens**

•  
**Stronger oven wall construction**

•  
**Greater yields of gas, tar, benzol, ammonia, etc.**

•  
**Lower operating costs**

# **KOPPERS**

DESIGNERS • BUILDERS  
PRODUCERS • MANUFACTURERS  
DISTRIBUTORS • OPERATORS

# Whose



HERE ARE a number of products made from Cold Rolled Strip Steel. Note the smooth, shining finish which attracts customers. The variety of products which can be fabricated with economy from Cold Rolled Strip Steel is without limit.



# e Product

## WILL THIS CUSTOMER BUY?

THIS customer wants a piece of merchandise that has an attractive appearance, that is designed to give efficient service, and is priced to suit the pocketbook. All customers have those things in mind when they buy. Cold Rolled Strip Steel offers fabricators the shortest route to these consumer demands.

American Quality Cold Rolled Strip Steel has the smooth, shining finish that is sure to catch the customer's eye. This product is easy to fabricate because it is made in a complete range of widths, edges, tempers and finishes to meet the manufacturing requirements and the design of fabricated products. And American Quality Cold Rolled Strip Steel can lower your production costs, because this material ranges lower in cost than some of the more expensive metals.

Examine your own products. Perhaps there are several places where you can improve them at worthwhile savings by using parts fabricated from American Quality Cold Rolled Strip Steel. Our sales representatives will be glad to give you any necessary assistance in working out the application of Cold Rolled Strip Steel to your needs.



AMERICAN QUALITY Cold Rolled Strip Steel is available in a complete range of widths, edges, tempers and finishes. It can be produced either in coils or in cut lengths to suit your particular requirements.

UNIFORMITY, which is so important in Cold Rolled Strip Steel, is constantly checked in our product. Our laboratories and skilled craftsmen join in producing a product of the highest uniformity. You are assured of the same high quality whether you buy a few coils or a full carload of American Quality Cold Rolled Strip Steel.

**U·S·S AMERICAN QUALITY COLD ROLLED STRIP STEEL**  
**AMERICAN STEEL & WIRE COMPANY**

Cleveland, Chicago and New York

Columbia Steel Company, San Francisco, Pacific Coast Distributors • United States Steel Products Company, New York, Export Distributors

UNITED STATES STEEL







# *For all* INDUSTRIES *and all* PRODUCTS

**I**F you use ball bearings in your product, your plant, or your machines . . . there is a "Commercial" ANNULAR BALL BEARING exactly suited to your needs including all standard sizes. If you have an unusual or different installation, we make bearings to your own specifications.

In other words, "Commercial" ANNULAR BALL BEARINGS have a wide range of use from roller skates to locomotives: From customary standard types and sizes to the most complicated location. No job is too tough for "Commercial" ANNULAR BALL BEARINGS. They are precision bearings, quality bearings designed and built to withstand over-loads, side-thrusts and speeds up to 2500 R.P.M.

The cost of "Commercial" ANNULAR BALL BEARINGS is astonishingly moderate—a feature which appeals to manufacturers who seek to cut costs in these days of rising prices. In addition to all these advantages, we offer the services of our Engineering Staff—ready at all times to help solve your bearing problems. Get complete details regarding "Commercial" ANNULAR BALL BEARINGS.

**THE SCHATZ MANUFACTURING CO.  
POUGHKEEPSIE, N. Y.**

Detroit Sales Office: 2608 Book Tower  
Chicago Sales Office: 120 N. Peoria St.  
Cleveland Sales Office: 402 Swetland Bldg.

# **"Commercial"**

## **ANNULAR BALL BEARINGS**

# Increase your profits with

# J&L STEEL

*"We've used  
nothing but*

**J&L  
COLD  
FINISHED  
IMPROVED  
BESSEMER  
SCREW  
STEEL**  
*for three  
years"*



**"Our production has increased, costs are lowered,  
and quality is better than ever before" . . . says  
President of large metal products company**

**T**HREE years ago, the Union Screw and Manufacturing Company, Pittsburgh, ran exhaustive tests on all makes of free-machining steels. They found that Jones & Laughlin Cold Finished *Improved Bessemer Screw Steel* was far superior in every way, and since that time have used it exclusively.

Mr. O. C. Zimmerman, the President of this company, says: "We find that J&L *Improved Bessemer Screw Steel* gives us increased machining and drilling speeds. The chips come away from the work freely and don't block the tools . . . tools work at a lower temperature and last longer.

We save money because of lower re-tooling costs and fewer rejects. And the quality, appearance, and serviceability of our finished parts are improved . . . our sales and profits are increased."

You will get these same advantages with J&L *Improved Bessemer Screw Steel*. It is made by a special process that improves the machining qualities of regular Bessemer Screw Steel to a point beyond comparison with any other steel.

Only J&L can give you this *extra* machinability. For greater profits . . . buy J&L Cold Finished *Improved Bessemer Screw Steel*.

## JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH, PENNSYLVANIA

MAKERS OF HIGH QUALITY IRON AND STEEL PRODUCTS SINCE 1850

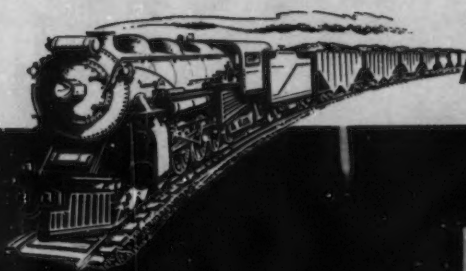


Made of  
SAE 5112  
J&L Improved  
Bessemer Screw Steel



J&L Cold Finished *Improved Bessemer Screw Steel* is SAE 5112, an unusual high analysis grade SAE 5112, is available in all diameters and lengths. It is the best choice for the most difficult work. And available in the rolled form. For the latest information, write for a copy of this bulletin "J&L Improved Bessemer Screw Steel."





ANYONE COULD RUN A TRAIN\_



BUT, IT TAKES EXPERIENCE TO *Control* IT!

#### REPRESENTATIVES

NEW YORK, N. Y.  
Wm. C. Dickey

PITTSBURGH, PA.  
McKee-Oliver, Inc.

ST. LOUIS, MO.  
Hubbell & Sharp

DETROIT, MICH.  
H. L. Sevin

CLEVELAND, OHIO  
E. F. Bond

SAN FRANCISCO, CAL.  
W. S. Hanford

MONTREAL & TORONTO, CANADA  
Drummond McCall & Co., Ltd.

BOSTON, MASS.  
Edward H. Lloyd

CHICAGO, ILL.  
Theo. L. Dodd & Co.

HOUSTON, TEXAS  
The Corbett Corp.

SEATTLE, WASH.  
W. C. Scott, Jr.

LOS ANGELES, CALIF.  
Ducommun Metals &  
Supply Co.

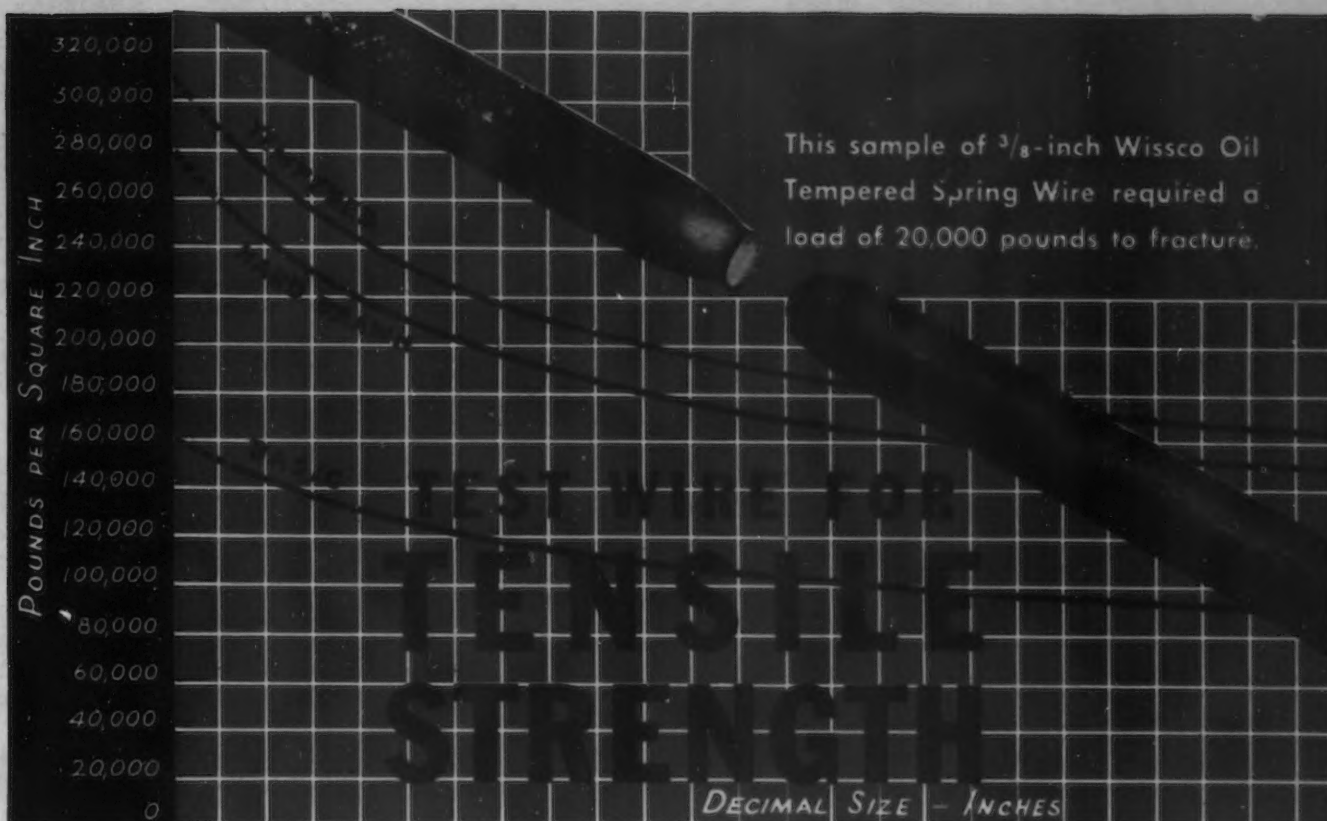
Control of processes is the secret of uniformity.

*Control* of products from ingot to finished material is the reason for the widespread acceptance of WORTH Sheared Steel Plate, Flanged and Dished Heads and Blue Annealed Sheets.

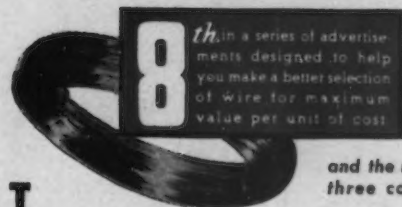
Try WORTH Quality—and standardize on it!

WORTH STEEL COMPANY · CLAYMONT · D<sup>EL</sup>.





0 .020 .040 .060 .080 .100 .120 .140 .160 .180 .200 .220 .240 .260 .280 .300 .320 .340 .360 .380 .400 .420 .440 .460 .480



8th. In a series of advertisements designed to help you make a better selection of wire for maximum value per unit of cost.

These curves indicate the relative decrease in tensile strength accompanying a decrease in wire diameter and the relation in strength between three common commercial wires.

**I**T'S a safe general rule, except in the case of soft annealed wire, that the higher the tensile strength the higher the price of wire per pound. Strength is built up by costly operations of cold drawing and heat treatment. For instance, the three wires charted above are treated as follows. Manufacturers' BASIC Wire is finished by cold drawing either from hot rolled rods or annealed wire. HARD drawn spring steel is drawn from patented (heat treated) rods or wire. TEMPERED SPRING WIRE is cold drawn and oil tempered as a final heat treating operation.

Wickwire Spencer manufactures High and Low Carbon Wires—in various tempers, grades and finishes—for your specific purpose. Hard-Drawn, soft or annealed Basic or Bessemer Wires—Hard-Drawn annealed, or oil-tempered Spring Wire, Chrome Vanadium Spring Wire—Valve Spring—Music—Clip—Pin—Hairpin—Hook and Eye—Broom—Stapling—Bookbinding—Dent Spacer Wire—Reed Wire—Clock—Pinion—Needle—Bar—Screw Stock—Armature Binding—Brush—Card—Florist—Mattress—Shaped—Rope—Welding. Flat Wire and Strip Steel, High or Low Carbon—Hard, annealed or tempered—Clock Spring Steel—Corrosion and Heat Resisting Wires. Consult the Wickwire technical man on your wire problems, however large or small.

Each has different range of tensile strength and other physical characteristics.

Often it is far more economical to purchase a high tensile wire, not only for saving in weight and space, but to gain other desirable properties that accompany a high tensile wire.

Wickwire Spencer Research Laboratories would be only too glad to make a study of your use of wire and recommend a wire with the proper tensile for your purpose. Send for a more complete copy of the above chart and other valuable data included in a booklet.

#### WICKWIRE SPENCER STEEL COMPANY

New York City, Buffalo, Chicago, Detroit, Worcester. Pacific Coast Headquarters: San Francisco. Warehouses: Los Angeles, Seattle, Portland. Export Sales Dept.: New York



# To the Manager of a Plant That's "OFF THE MAIN LINE"

YOU enjoy numerous advantages that the man who is managing a plant near a large industrial center doesn't.

However, offsetting these advantages are a few disadvantages. Farther from your market, you must make earlier shipments to meet competition; you must order stock and supplies farther ahead of schedule.

Probably as important as any of your problems is that of maintaining production equipment. You require a versatile maintenance crew; and you purchase new equipment with an eye to minimizing maintenance.

Many managers of plants that are "off the main line" specify General Electric control on all their new machinery, for they know that it is especially designed to withstand the severity of machinery use—the vibration, dust, oily grit, and punishing operation.

The manager who specifies G-E control also protects himself against service delays. One of the 28 G-E warehouses, with its complete stock of motors and controls, is always ready to assist in keeping G-E equipped machinery "on the line." General Electric Company, Schenectady, New York.

Whether or not your plant is on the main line, you can benefit by using machinery that's G-E equipped. It will minimize maintenance and reduce costs.

**WHEN YOU BUY  
MACHINERY  
SPECIFY  
GENERAL ELECTRIC  
MOTORS and CONTROL**



## CONTROL DEVICES DESIGNED

### INDICATING PUSH BUTTON

This double-duty push button is the latest device for efficient machine control. It is not only a reliable push button, but an indicating light as well. A lamp in the translucent button indicates operation of the magnetic control.

Publication GES-1728 gives the full story on this push button



### SIZE 00 CONTACTOR

This compact contactor for relaying and for controlling small motors is worthy of your careful attention. Compactness and excellent operating characteristics make it extremely well suited to machine-tool use.

Bulletin GEA-2577 describes this contactor



# GENERAL





## FOR USE ON MACHINES

### THE THRUSTOR

The Thrustor is a motor-operated hydraulic device for applying a straight-line thrust. Recently reduced prices greatly increase its field of application.

Send for publication  
GEA-1614A on Thrusters



### THE SOLENOID

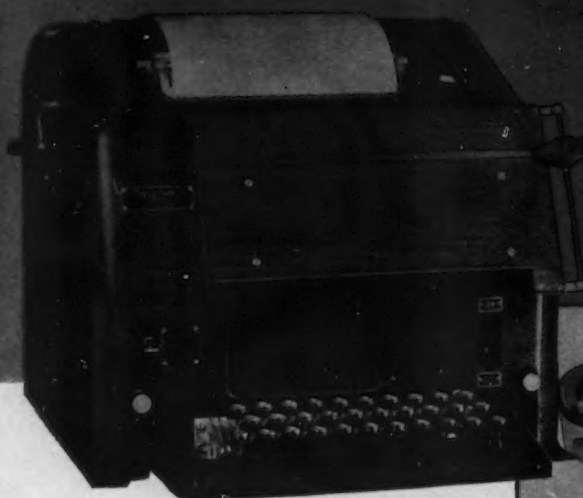
For straight-line motion with shorter stroke and less force, the G-E solenoid meets the requirements admirably. Compact, efficient, and dependable, it is an essential part of many modern machines where automatic or rapid operation of levers, latches, or other parts is desired.

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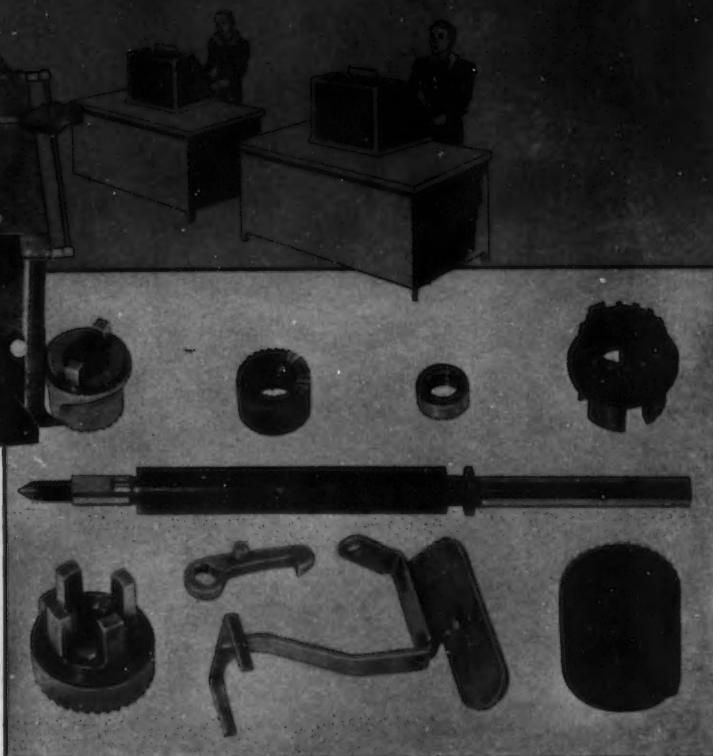
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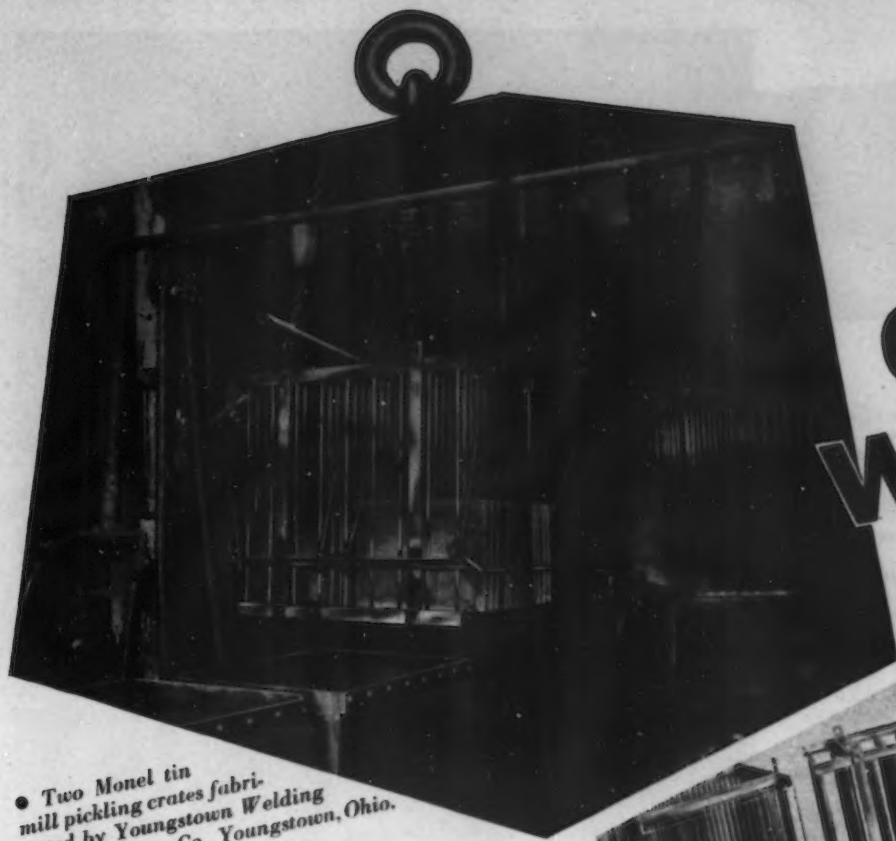
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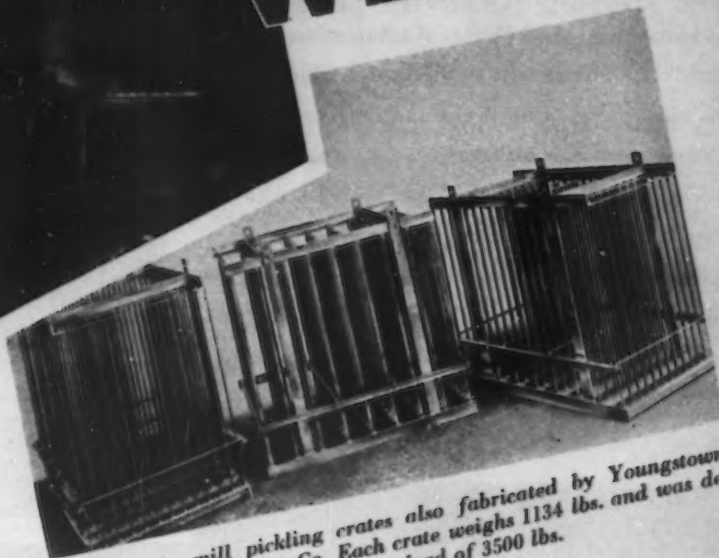
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WEIGHT.**



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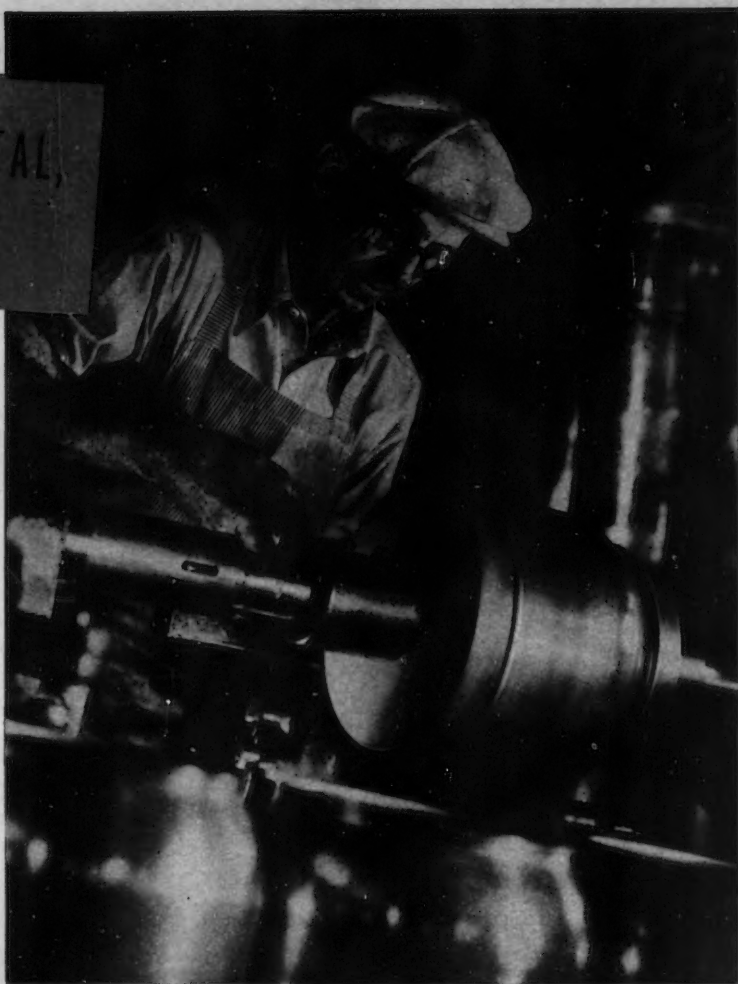
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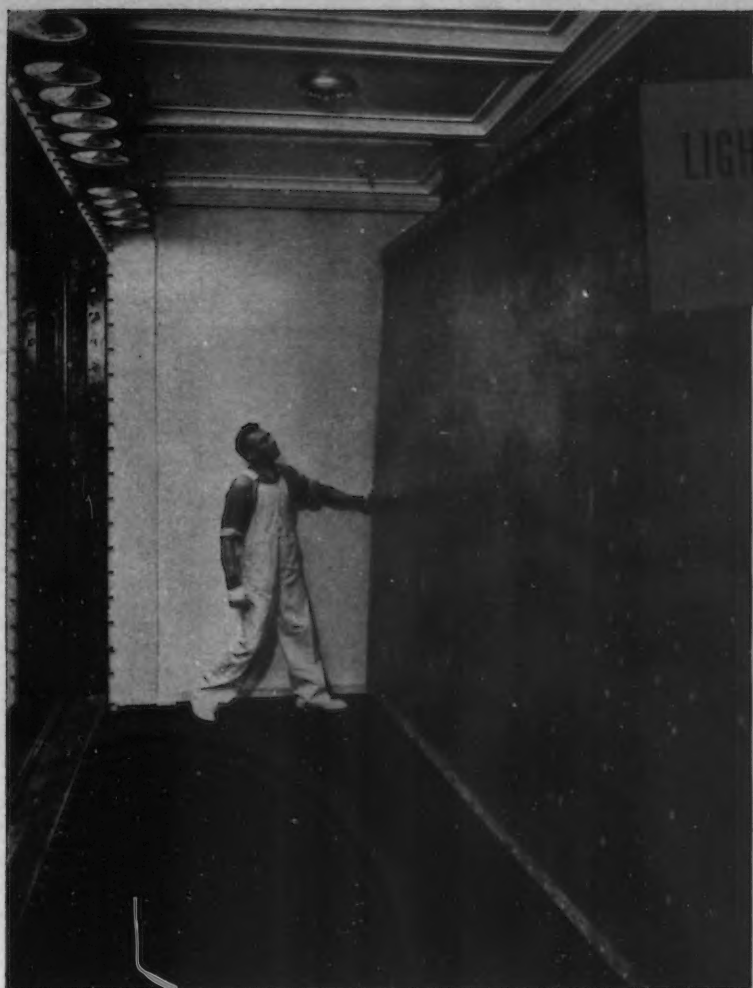


*Above, the workman is forming Aluminum sheet on a spinning lathe; to the left is shown electric spotwelding as part of an assembly operation. The use of Aluminum introduces no unusual manufacturing problems.*



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## LIGHT WEIGHT SPEEDS ERECTION OF FLOOD BARRIERS

Twice since the disastrous flood of 1936, the Joseph Horne Company of Pittsburgh has rushed its new Aluminum bulkheads into place, making the building watertight to a height of twelve feet. No rehearsals these, but serious business. Flood waters came up into the streets.

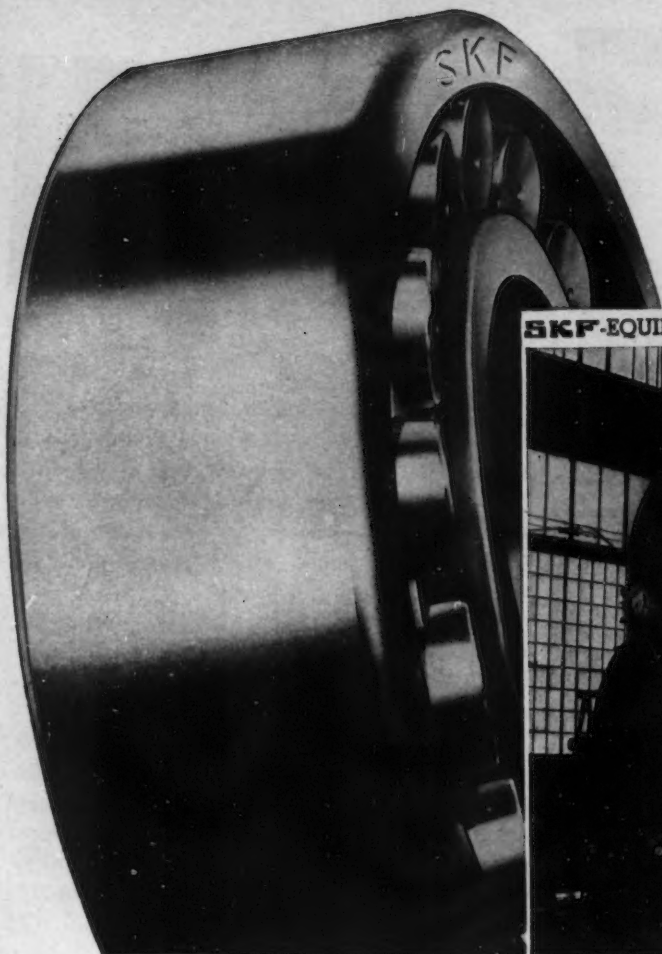
Constructed of Aluminum plates and structural shapes, these bulkheads contrast sharply with those now discarded; some of which required 15 to 20 men to transport and hoist into place; others that warped and proved useless when wanted. Today, thanks to the light weight of Aluminum, only two men are required to install a bulkhead sealing a window. ALUMINUM COMPANY OF AMERICA, 2185 Gulf Building, Pittsburgh, Pennsylvania.

*Aluminum bulkheads are always available in times of emergency. Above you see a window cleared of merchandise; decorative back paneling has been removed. The Aluminum bulkhead is being rolled forward on supporting trolleys to be bolted behind the glass.*

*Right: Aluminum bulkheads for sealing doorways are stored in easily accessible locations.*

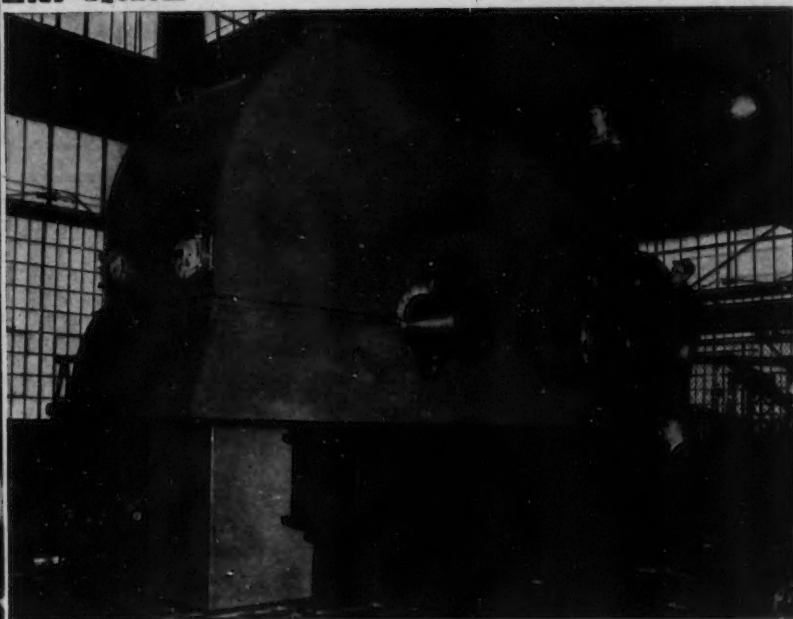


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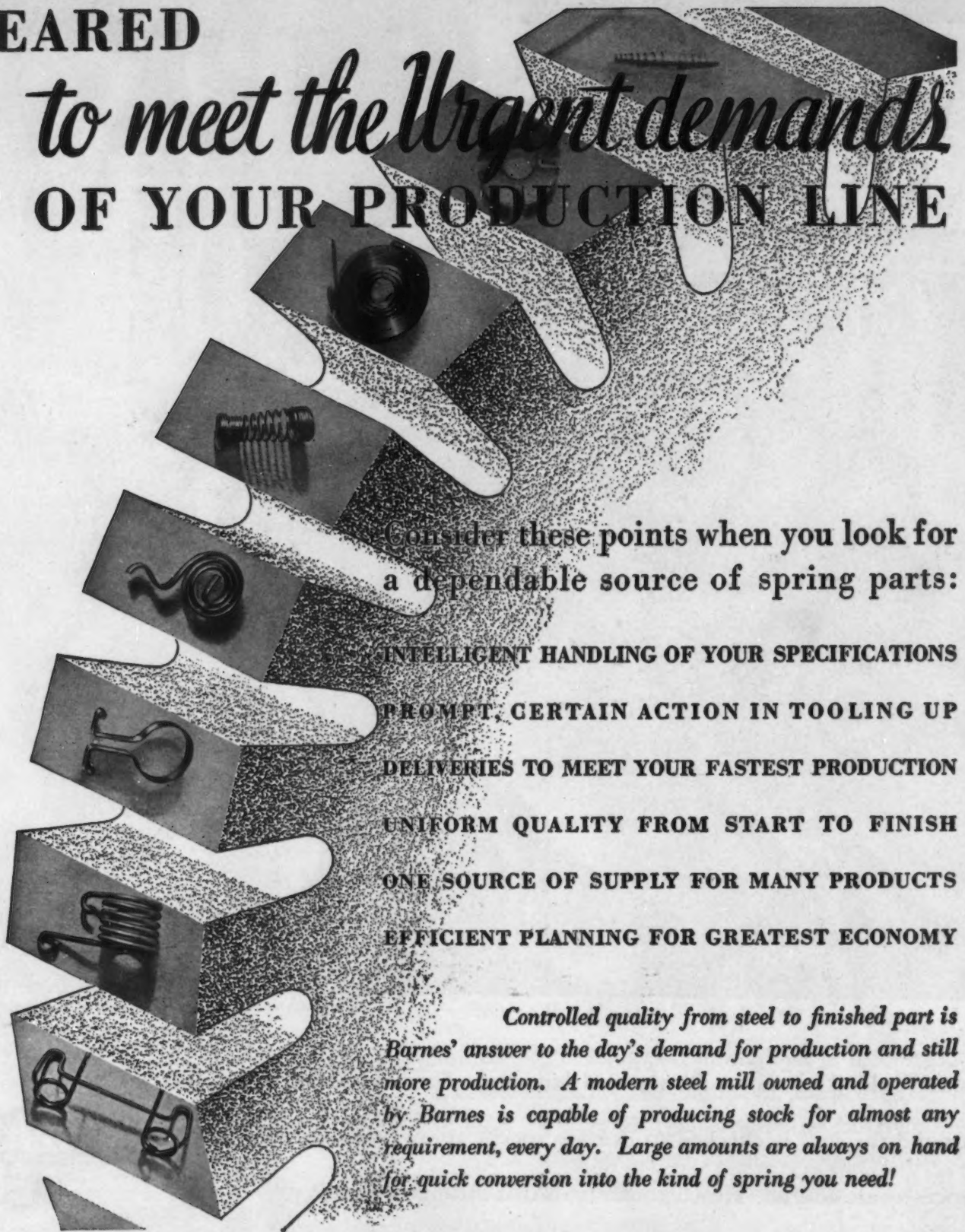
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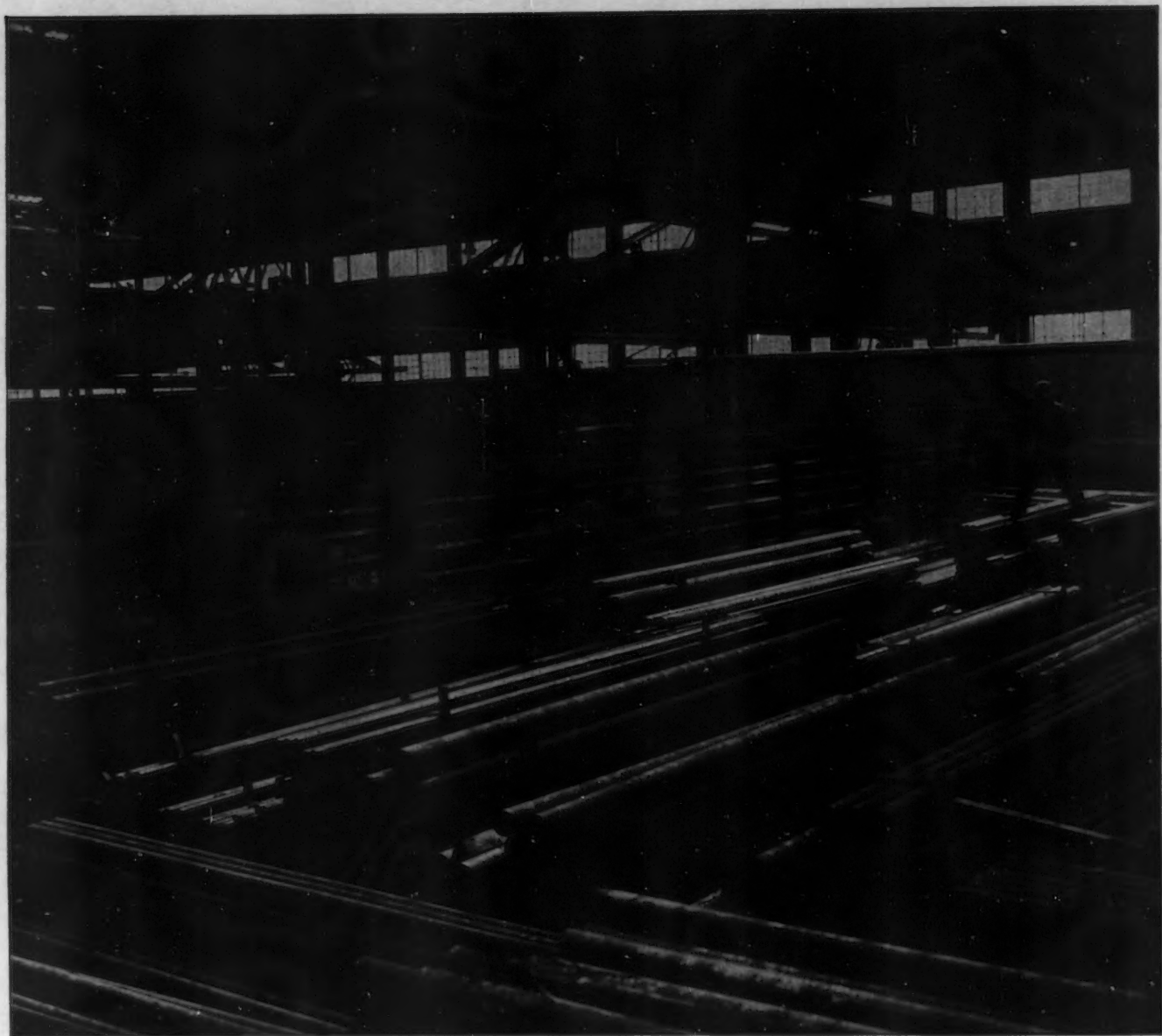
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# RYERSON STEEL-SERVICE



# ▲▲▲ THE IRON AGE ▲▲▲

ESTABLISHED 1855

August 19, 1937

Vol. 140, No. 8

## May We Suggest a Program?

It may seem presumptuous for THE IRON AGE to attempt to suggest a program to the Administration and Congress, but since those who disagree with New Deal procedures have been challenged to do so, here goes—

Our program may be said to be the antithesis of that of the New Deal. The New Deal believes in tearing down business and industry, in loading it with taxes to the point of exhaustion, in making thrift, initiative and independence subjects of ridicule and public opprobrium, in encouraging class consciousness and class hatred, in the profligate dissipation of public funds and in the incurring of an unprecedented and staggering public debt.

Our program, as said before, is the opposite of that of the New Deal. We believe that in this industrial and business age, unless you prefer Communism to Capitalism, the progress of America is dependent upon the well-being of business, industry and agriculture. And we know that this progress cannot come through vote-catering to the least valuable third of our population, to the detriment of the vastly more productive and valuable two-thirds.

Our program for a prosperous America is as follows:

Abolish unemployment in the one practical way, by encouraging instead of hamstringing business and industry. These create employment; the CIO, the AFL and the "submerged third" do not.

Revise the tax law which now makes it a penalty for a business concern to save for a "rainy day," even though that saving would be used as in the last depression to hold an umbrella over labor.

Revise the one-sided Wagner Act which is now generally admitted to be merely a club in the hands of unscrupulous labor racketeers.

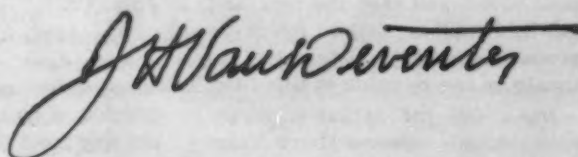
Abolish the labor relations board, which is a modern Spanish Inquisition devised to torture employers, or at least man it with fair-minded and unbiased citizens.

Abandon the imported doctrine that it is necessary for class to be arrayed against class and preach the American philosophy of cooperation and peace between employer and employed.

Send the professors, the brain trust neophytes, the hot dog boys and the crackpots who now rule America back to the institutions where they properly belong. (And we do not mean educational institutions!)

Reaffirm the fundamental American belief in a system of checks and balances, of an independent Congress and Supreme Court, and of States rights as opposed to a centralized Fascist dictatorship issuing orders for a regimented national goose-step.

Such is the program that we offer. And we predict that if it were adopted, our economic troubles would be over and our troublemakers out of jobs.



THE farm tractor has become the symbol of more progressive farming, and tractor production is booming.



## Farm Buying Power is Highest



UNOFFICIAL estimates based upon Department of Agriculture figures indicate that cash income from farm marketings, including Government benefit payments, may total \$9,500,000,000 during 1937, an increase of \$1,400,000,000 over the 1936 figure. This compares with cash incomes, including Government payments of \$7,090,000,000 in 1935, \$6,348,000,000 in 1934 and \$5,117,000,000 in 1933.

Although declining to forecast even an approximation of the 1937 income, Agriculture Department officials say the farmer is getting the best break in a decade because of bumper crops coincident with good prices and that the nine and one-half billion dollar figure is probably as good as a tentative estimate as can be made at this time.

Basis for the optimism is the cash income received from farm

marketings during the first five months of 1937. It totaled \$2,899,000,000 or \$361,000,000 more than in the first five months of 1936. Including Government payments, total cash income for January to May amounted to \$3,202,000,000 compared with \$2,650,000,000 for the corresponding period of last year, an increase of 21 per cent.

In view of an anticipated increase in grain marketings and maintenance of the present high level of farm prices, the July cash farm income, says the Department of Agriculture, is expected to show a markedly greater than seasonal increase over June and may exceed that of July, 1936, when income was the highest for the month since July, 1929.

The 1936 income available for the farmers' labor, capital, and management reached about \$5,300,000,000, a figure arrived at by deducting from the 1936 gross income

of \$9,530,000,000, the estimated expenditures of about \$4,230,000,000 for goods used in production, wages, interest, taxes and rent, as well as an allowance for depreciation on buildings and equipment. This exceeds the 1935 comparable figure of \$4,538,000,000 by 17 per cent. It is only 7 per cent less than the comparable 1929 income of \$9,669,000,000.

In general, the increase in the 1936 gross income over 1935 was due principally to a higher level of farm prices, since the total volume of agricultural production in 1936 was only 3 per cent larger than in 1935. The anticipated increase in farm income in 1937 will result from both a higher level of prices and substantial increases in production levels. Because of the more nearly normal crops this year, the distribution of the income among the remaining five months of the year also is likely to be more near-





## in 17 Years

ly normal as compared with the situation a year ago when the drought resulted in heavy crop sales early in the season and a consequent sharp reduction as the season progressed.

The buying power of the net income of farmers as a group is the highest in 17 years, according to the department. Economic factors listed as responsible include: (1) a reduction in farm mortgage debt with a continuation of the lowest interest rates in our history on long-term farm loans assured by recent action of Congress; (2) a rise of about 12 per cent in farm real estate values since the depression law; and (3) more voluntary transfers of farm real estate with fewer foreclosures on mortgages. The department estimates the value of all farm land and buildings increased from less than 31 billions in 1933 to more than 34 billions in 1936.

NATURE has its own law of compensation. Government subsidies, droughts, dust bowls, chinch bugs, boll-weevils may come and may go but Mother Nature, scorning all of them, has her own way of building up the "ever-normal granary," Joseph or no Joseph, Secretary of Agriculture Wallace or no Secretary of Agriculture Wallace.

This year nature is blessing the United States with bumper crops which, fortunately, were not ploughed under. The result is that the American farmer will have more purchasing power than at any time since 1919.

According to official estimates the United States will have a billion dollar wheat crop, the first in 10 years,

with the result that once more the United States has become an exporter of wheat, shipments of which are already going to Europe. This in contrast to recent years when the United States was in the anomalous position of importing wheat.

King Cotton is about to ascend his throne once more and estimates of production this year are placed at 14,000,000 bales.

Rising above normal, the corn crop is expected to be more than 2,500,000,000 bushels.

Barring such a disaster as an invasion of bugs, there will be a bumper crop of potatoes while dairy products will be abundant and the prospects for fruits and vegetables also are particularly bright.

Total production expenses of farms in 1936, including the cost of commodities used up currently (such as feed, fertilizer, containers, gasoline, etc.) and expenses for wages to hired labor, interest and taxes payable on the farm property used in production, rent to non-farmer landlords, and depreciation of buildings and equipment used in production, amounted to about \$4,230,000,000 compared with \$3,970,000,000 in 1935. The increase in farmers' expenses for

production from 1935 to 1936 was greater than in any year since 1933, the low point in farmer expenditures. This trend is expected to continue in 1937.

Total expenditures in 1936, however, were still only about two-thirds as large as in 1929. Expenditures for all of the principal items used in production in 1936 were considerably lower than in 1929, but the greatest decrease was in wages to hired labor, which were only a little more than half as

large as in 1929. The interest and taxes chargeable to production were also considerably lower in 1936 than in 1929. Farm implement expenditures, including automobiles, tractors and trucks dropped from \$916,000,000 in 1929 to \$593,000,000 in 1935. The low point, however, came in 1932 when only \$186,000,000 was spent.

The Department of Agriculture reported in December that farmers' expenditures for machinery, automobiles, farm buildings and repairs were somewhat higher than the depreciation on these items for the first time since 1929. Because of these larger expenditures for capital equipment, the total cash outlay of farmers, including expenditures for capital goods, wages to hired labor, and interest and taxes payable, climbed to approximately \$3,625,000,000 in 1936 as compared with \$3,332,000,000 in 1935.

Production expenditures of farmers chargeable to 1936 operations increased less than the gain in gross income, as had been the case during the past several years. While gross income, including Government payments, increased 12 per cent from 1935 to 1936, expenses increased only 6 per cent. The actual position of the farmer therefore improved more during the year 1936 than is indicated by the gross income alone. The income available to farm operators in 1936 in return for their labor and capital and management of \$5,300,000,000 was three and one-half times as large as in 1932 and only 7 per cent less than in 1929. The 1936 cash income available for operators' labor, capital and management was \$3,870,000,000 compared with \$3,231,000,000 in 1935 and \$4,145,000,000 in 1929.

#### How Much Will the Farmer Spend?

In general, farmers finding money in their pockets for the first time in years, pay up old debts and back taxes first. After that they concentrate on building up tool inventories including, of course, machinery, tractors, trucks, etc. Agricultural experts say such expenditures usually come ahead of repairs on farm buildings and homes.

The department declines to estimate how much the farmer will spend during the coming year on the basis of his increased earnings, but selected expenditures listed for

1935 when the cash income from farm products plus Government payments totaled \$7,090,000,000 include: \$593,000,000 for farm implements including automobiles, tractors and trucks; \$446,000,000 for feed; \$166,000,000 for fertilizer; \$440,000,000 for operating farm machinery including automobiles, tractors and trucks; \$502,000,000 for wages to farm hands including board; \$365,000,000 for taxes; and \$400,000,000 for interest on farm mortgages.

Amounts spent on farm implements (also including automobiles, tractors and trucks) for the past eight years are: \$916,000,000 in 1929; \$677,000,000 in 1930; \$366,000,000 in 1931; \$186,000,000 in 1932; \$218,000,000 in 1933; \$375,000,000 in 1934; and \$593,000,000 in 1935.

On the basis of 1935 figures, and anticipating the nine and one-half billion dollar income, farm implement expenditures might be expected to total in the neighborhood of \$850,000,000 for 1937.

#### Relationship of Farm Income and Sales of Equipment

It is generally recognized that there is quite a definite relationship between annual farm income and annual farm equipment sales, according to Harry G. Davis, director of research, Farm Equipment Institute, Chicago. "This relationship," he said, "becomes more evident when cash income is low because farmers must then confine their purchases largely to vital necessities and can make few, if any, investments in operating equipment. In periods when cash income is larger, farmers become more liberal in their expenditures and sometimes purchase even more than normal quantities in filling deferred needs. The following table shows cash farm income and retail farm equipment purchases in percentages of 1929 income and purchases from 1929 to 1935:

	Cash Farm Income	Farm Equipment Purchases
1929 .....	100	100
1930 .....	81	83
1931 .....	56	42
1932 .....	41	21
1933 .....	48	25
1934 .....	61	37
1935 .....	68	65

"Despite the great importance of farm equipment in producing farm income, farmers normally

spend only a small portion of their total income for machines which are positively essential to the production of their income. In 1929, the year that gave the farm equipment industry one of its biggest domestic volumes, farmers spent only 4.9 per cent of their total cash income for farm equipment. In 1932, they spent only 2.45 per cent of their much smaller income, while in 1935 they spent 4.74 per cent. As a result of small expenditures for farm equipment during the three main years of the depression, 1932 to 1934, there was accumulated a tremendous backlog of unfilled equipment needs which was materially responsible for the increased sales of 1936.

#### Weather Conditions Ideal

The prospects for a great increase in the total cash income going to farmers from the sale of their farm products are unusually bright this year, and may be attributed to several factors. Weather conditions so far this year have been ideal for crops, and harvests are expected to net far more than was realized last year and are estimated as nearly equal to the average of 1928 to 1932, which is considered as a normal five-year period by the Department of Agriculture. Wheat alone is estimated to yield 882,000,000 bushels this year or a quarter of a billion bushels more than was harvested in 1936, which, when added to present stocks of about 100,000,000 bushels, would total nearly a billion bushels. Figuring our domestic requirements this year to run between 675,000,000 to 700,000,000 bushels, and allowing for a normal carryover of 130,000,000 bushels, there would remain an exportable surplus of some 150,000,000 bushels.

Weather conditions in the other major producing countries, Canada, Australia and the Argentine, have not been as favorable as in this country, and their crops are short. It appears that the United States will once more regain its place as the world's wheat provider, as the exportable surpluses of these nations are negligible. German requirements are said to be in excess of available supplies, and so another customer may be added to the list. With this stimulus in the background, the price of wheat is considered extremely unlikely to break to any extent, which will



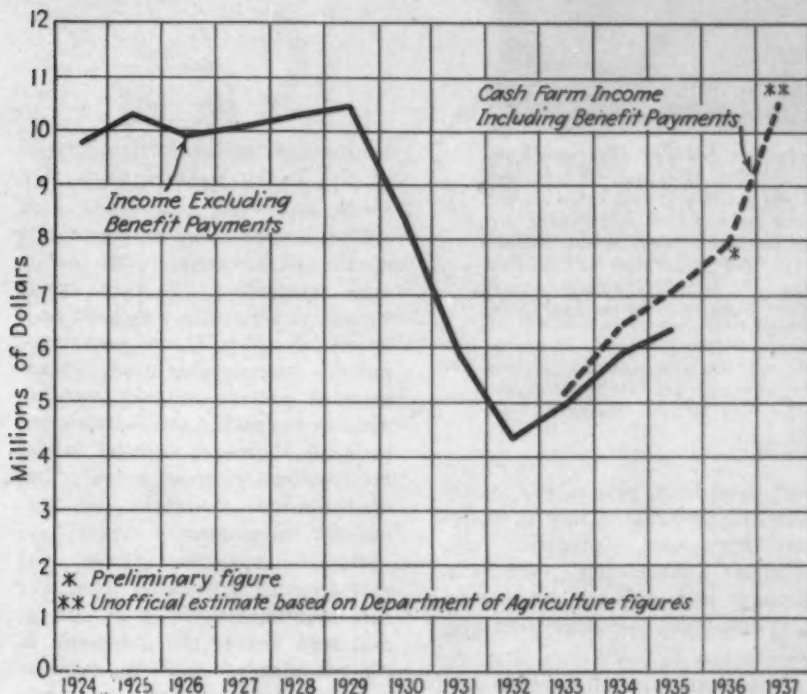
mean that wheat alone will bring an estimated \$996,660,000 into farmers' pocketbooks, an increase of \$396,940,000 over last year's estimate at this time.

Corn prospects are the best in years, and the current estimate of about 2,700,000,000 bushels exceeds even the average of the 1928 to 1932 period, and tops last year's actual production by more than a billion bushels. With perfect grow-

The estimated rye crop is 24,000,000 bushels greater than last year's realization and estimate, both being the same, so the added cash value this year will amount to \$24,640,000.

On the basis of these computations, therefore, cash income to the farmer will increase this year \$801,757,000 as a result of the sale of grain crops alone.

In 1936 the total received was



ing weather thus far this year, and the same ideal conditions forecast for the remainder of the season, there appears little likelihood that this crop will suffer any blight.

On the basis of there being only about 20 per cent of the crop available for cash sale, the estimated increase in farm income from the sale of corn over last year's estimate at this same time of year amounts to \$278,000,000.

This year's oats crop is estimated to run a full 300,000,000 bushels over last season's yield, and this, figured on the basis of a July 15, 1937, average price, will result in a \$38,085,000 increase over the value of the estimate in July last year. Here again about 20 per cent is all that is available for sale.

The barley crop is up 96,000,000 bushels over last year's production, and 78,000,000 bushels from last year's estimate, on which basis \$64,092,000 of increased income will be realized in 1937.

composed 43.7 per cent of farm products, while the remaining 56.3 per cent was derived from the sale of livestock and related products. This year the total income farmers will gain through the sale of hogs, cattle, sheep and calves is estimated to be \$2,345,000,000, including both Federal inspected meats and non-inspected products, or an increase of \$249,000,000 over last year's realization of \$2,096,000,000. Although the tonnage of meat is estimated at 20 per cent less than the five-year average from 1932 to 1936, high prices more than made up for the reduction, so the net income is greater.

The only available figures on current sales of dairy products, poultry and eggs, cotton and cottonseed, and fruits and vegetables extend from January this year to May. Poultry and eggs in that period sold to the amount of \$266,000,000 compared with \$249,000,000—and those informed on market

conditions state that sales since and over the last half of the year should be on a greater scale than those already reported.

The same observation holds true of dairy products, which up to May had recorded sales of \$602,000,000 compared with \$569,000,000 last year. Cotton and cottonseed sales this year are also ahead, \$173,000,000 to \$141,000,000. Growers of fruits and vegetables have taken in \$499,000,000 against only \$391,000,000 for the same period last year. Heavy crops of fruit in the Western states may tend to depress prices somewhat later in the season, but the substantial gains are expected to be maintained.

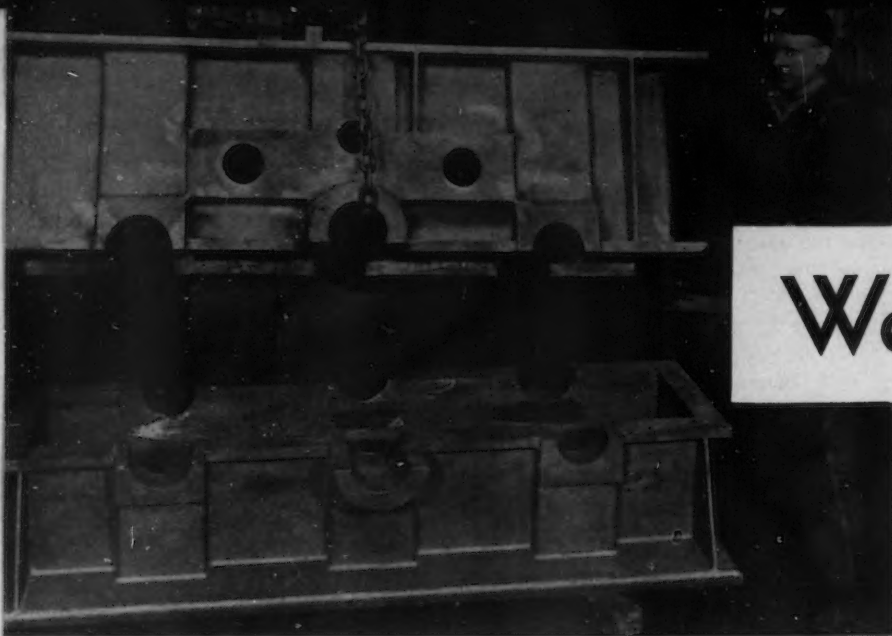
Thus, for these important crops, although no estimates of future yields are forthcoming, a distinct forward trend is seen, and present prospects and weather forecasts give no reason to expect any occurrence which might bring about a reversal of this tendency.

Totaling all marketings, then, for which estimates are available, we arrive at an increase of \$1,050,757,000 over the actual amount received last year. In addition, a considerable increase is expected from the fruits, cotton, dairy products, etc., discussed above.

"Government payments to farmers in 1936 were \$287,000,000 as compared with \$583,000,000 in 1935, or a decrease of nearly 51 per cent," according to the Farm Equipment Institute. "They consisted of \$216,000,000 paid out in carrying out crop curtailment contracts entered into between farmers and the Government before the agricultural adjustment act was nullified; \$39,000,000 in cotton price adjustments; and \$32,000,000 for soil conservation, payments for which started late in 1936."

In 1937 the crop curtailment payments will be negligible if any, so that total Government payments to the farmer this year will total considerably less than last year.

Not only the income but the outgo must be considered before it is safe to state that the farmers will have more money on hand with which to buy new farm equipment, and so, debts, mortgages, other expenses and purchases all must be considered in the light of their being greater or less than was the case in 1936.



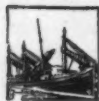
# Welded Machine

**A** FABRICATED steel housing for a multi-reduction, two-way drive speed reducer built by Foote Brothers Gear & Machine Co., Chicago. This double-helical reducer is driven by a 75-hp. motor and the housing as fabricated weighs 4230 lb. In designing this unit the bearing blocks, gas-cut from rolled plate, are supported by special box sections which transmit the load directly to the reducer base plates and assist in resisting side thrust. The joint preparation and welding are of a quality suitable for dynamic loading of the unit. Shot blasting after anneal is used to obtain a clean surface which is an excellent preparation for the final finish.

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By **WILLIAM F. SHERMAN**  
Detroit Editor—*THE IRON AGE*

o o o



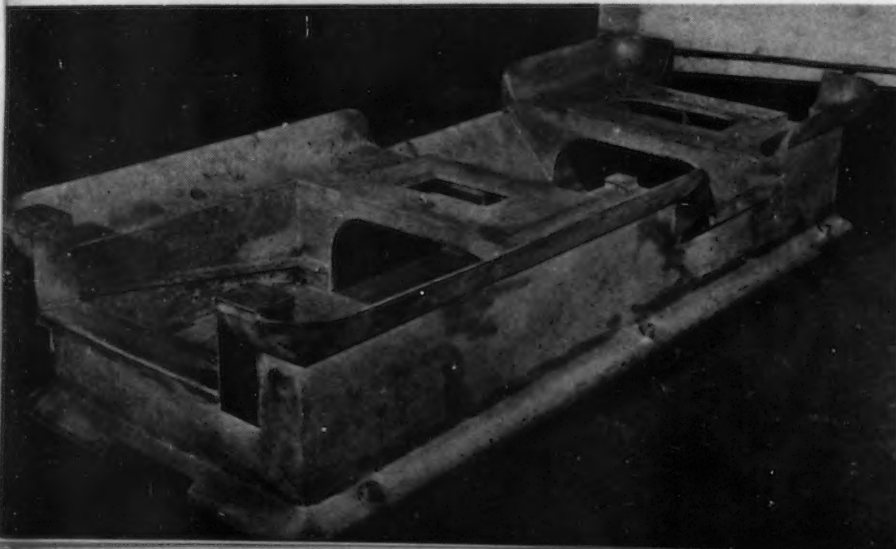
**MACHINE** base fabrication presents a wide field for application of the varied techniques of the welding engineer. Frequent specification of special machine equipment today, particularly in

high-production plants, has meant a constant stream of new problems involving cost, process compromises, machining procedure, strength and stiffness characteristics, distortion and dimension control.

Seven examples of machine fabrication, selected from some 3000 different designs, are presented here as sample solutions to specific welding and fabrication problems. The discussion of each has been prepared by J. H. Cooper, welding

o o o

**A** GOOD example of the condition of a fabricated base before machining or painting. This base was built for the National Acme Co., Cleveland, and contains a number of compartments and troughs which must be oil and water tight. In this design, corner castings are used in the trough and footing to achieve good appearance.



engineer of the fabricating division of the Taylor-Winfield Corp., Detroit.

The examples are representative of the wide range of up-to-date steel fabrication. Without exception, each structure was built on a single-job order. This circumstance permits taking maximum advantage of pattern savings over an equivalent casting and is important in terms of time of delivery, where no previous patterns exist. Two or three-week deliveries are normal for these types of structures.

When making the change from cast iron to fabricated steel, the fact that steel is twice as stiff as cast iron due to the difference in the modulus of elasticity permits a thinning of wall sections and less ribbing, hence usually a reduction in weight. The casting problem of large thin sections in close proximity to heavy sections in an intricate structure is also eliminated.

Steel castings are often used in these welded structures for two reasons: One of these is to obtain smooth rounded corners, with curves in more than two planes, that is, curves which cannot be obtained by simple rolling or breaking of standard plates or sections. Steel castings are inset also whenever parts are required that exceed the thickness ranges for economical gas-cutting, that are particularly irregular in more than one plane, or that require an excessive amount of welding in very heavy sections. Obviously in the interest of economy the castings should be so arranged as to be as simple as possible. Bearings blocks of less width than 8 to 10 in. are most economically gas cut.

Pre-machining is a source of appreciable savings. For example,



# Base Fabrication



the ways for a machine bed can be roughed machined to the special contour required and then fabricated into the final assembly. After welding and annealing, the ways are finish machined. The same procedure is followed for large internal bores or turned diameters. The drilling and tapping of holes before assembly in positions inaccessible after fabrication is frequently practiced. Packing such threads with asbestos affords protection during shot blasting and annealing. Pipe tapped "weld-lets" in thin walls are used to obtain sufficient bearing for the pipe threads and eliminates this machining of the final structure whether in thick or thin walls.

As to the amount of metal necessary for finish allowances,  $\frac{1}{4}$  in. is the usual allowance. On small parts  $\frac{1}{8}$  in. finish is often used. Anything less than  $\frac{1}{4}$  in. is not to be advised as a general rule, even on small pieces. On exceptionally large structures or structures of such a specific design that experience dictates that an unusual amount of shrinkage is to be expected a finish of  $\frac{3}{8}$  or  $\frac{1}{2}$  in. should be used.

The great majority of these machine tool structures are given a stress-relief anneal. Not only is it essential that the slow release of the thermal stresses after machining should not cause misalignment of highly accurate machine tools, but almost without exception, decreased machining costs have been obtained due to resultant lack of hard spots.

Only clean, uniform silicon-killed steel, free from excessive scale or laminations, should be used. Carbon content should not exceed 0.20 per cent for best results.

**D**ISTORTION control is exemplified in this view, showing a partial assembly of a turning machine base for a multiple spindle lathe. This machine base, 93 in. in diameter and weighing 6970 lb., was fabricated for the Partool Machine Co., Detroit. The ring in the center was gas-cut from 4-in. steel plate and rough gas-cut beveled on the inside to minimize the amount of metal to be machined out. This machined seat carries a ball bearing race for a large turntable, not shown. This turntable is driven by a gear wheel actuated by a worm in the housing to the left of center. This housing is a steel casting welded into the internal assembly. Such a structure as this one, where two concentric circular sections are tied together with multiple ribbing, presents a problem of distortion control. Holding the sections concentric without having cracking of the welds in such a rigid formation requires weld metal of high ductility and close welding control.

• • •

All the welding is done in accordance with a closely controlled technique. Only heavily coated electrodes are used and all welding except tack welding at assembly is done with alternating current. The use of alternating current gives welds of good appearance, particularly in corners where the magnetic blowing of the direct current

arc has a tendency to produce an unsatisfactory weld.

Weld metal so obtained has physical values of 48-56,000 lb. per sq.in. yield point, 62-72,000 lb. per sq.in. ultimate tension, 28-33 per cent elongation in 2 in. and 30-35 ft.-lb. Charpy impact. Generally accepted values of 10,000 lb. per sq.in. in shear, 16,000 lb. per sq.in.

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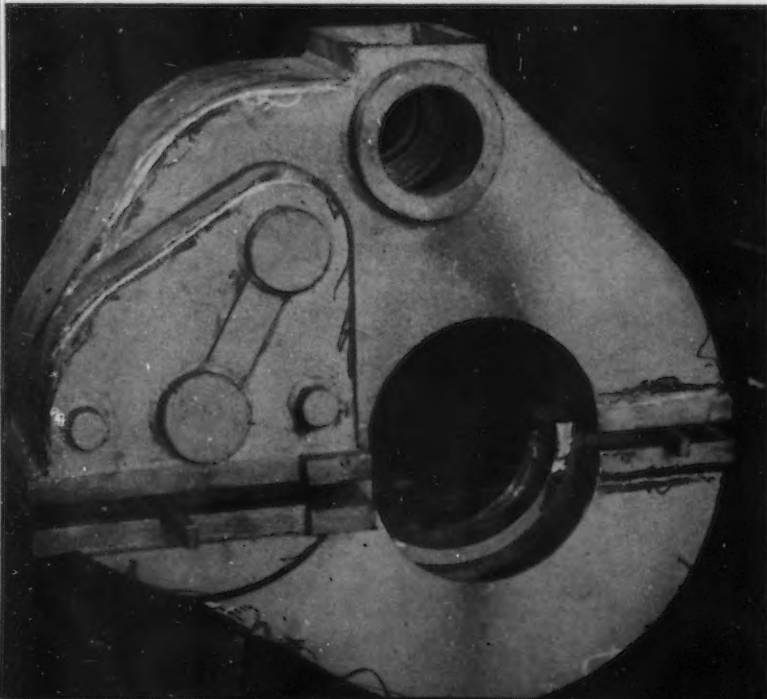
**A** COMBINATION of heavy intricate gas-cut parts, rolled plate, bars and castings which make a base of pleasing appearance is shown. This machine base was built for the Michigan Tool Co., Detroit. Rigidity, water tightness of the coolant troughs and good over-all appearance were required.





ABOVE

**P**REMACHINING to  $\frac{1}{4}$  in. finish of the moving platen guides was practiced in the case of the 200-ton knuckle joint flywheel press fabricated for the Henry & Wright Mfg. Co., Hartford, Conn. This press was designed with the main side members of  $2\frac{3}{4}$ -in. plate hot forged to the indicated shape and given a 100 per cent butt weld top and bottom. In this press frame these butt welds were subject to a severe type of loading. Weld metal of high ductility is required and "stress-raisers" must be carefully avoided. The large round bearing blocks are set through the heavy side plates with a large cross-section of weld around each. The top of the press has heavy plates set in between the side members with heavy welds and presents one of the relatively rare cases in which two dimensional stresses may cause cracking unless the welding technique is carefully controlled.



AT LEFT

**T**HE non-symmetrical shaped gear housing fabricated for the Morton Mfg. Co. of Muskegon Heights, Mich., presents a problem of distortion and dimension control in fabrication. The important design element is rigidity under dynamic loading. This housing is typical of a structure formed along standard lines from rolled and gas-cut plates and bars.

AT RIGHT

**T**HE spindle column and base were designed especially for rigidity rather than strength, with the internal ribbing of the base transmitting the load on the top plate to the bottom and side walls with a minimum of deflection. This column and base as built for Bergram Mechanical Engineering Co., New Britain, Conn., have a weight of 4150 lb. and a height of 72 in. The structure was stress-relieved and given a finish allowance of  $\frac{1}{4}$  in.



in tension and 18,000 lb. per sq.in. in compression, are used for static working loads and one-half of the above values for dynamic loads.

Proper welding bevels, have been carefully worked out to insure penetration of the root of the bevel to avoid "stress-raisers," such as unfused edges, and slag and gas inclusions. Bevels must not be too large as the final cost of weld metal ranges from 50c. to \$1 per lb. and a large bevel tends to cause undue distortion in the fabricated structure.

The majority of the structures are positioned to allow the centerline through each weld to be vertical. This permits the greatest speed of deposition of the weld metal, best appearance and strength of the welded joint, and minimum distortion of the welded structure.



## A Proposed Standard

### Classification of Graphite in

# GRAY CAST IRON<sup>1</sup>

By W. E. MAHIN<sup>2</sup> and  
J. W. HAMILTON<sup>3</sup>



PROBABLY no single development of recent years has been of more importance to our fundamental knowledge of ferrous metallurgy than the work on austenite grain size in carbon and low-alloy steels. This work began about fifteen years ago with the realization that grain size was, perhaps, as important as the chemical analysis in determining the properties and reaction to heat treatment of steels. During the ensuing years, the work of many investigators in adopting a standard scale for the measurement of grain size; in studying the quantitative effect of grain size on hardenability, impact strength, and other properties; and in studying the laws of grain growth and in developing the means of control of grain size through melting practice has accomplished much toward establishing the metallurgy of steel as an exact science of untold value in its application to industry.

<sup>1</sup> Abstract of paper presented before June meeting of American Society for Testing Materials, held in New York.

<sup>2</sup> Metallurgical Engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; formerly Research Metallurgist, Vanadium Corp. of America.

<sup>3</sup> Research Dept., Vanadium Corp. of America, Ann Arbor, Mich.

<sup>4</sup> Standard grain size chart for classification of steels (A.S.T.M. Designation: E 19-33), 1936 Book of A.S.T.M. Standards, Part I, p. 761.

THE need has been pointed out for a metallographic system of classification of the graphite phase in gray cast iron. In the following paper the authors propose two standard classifications. One of these in serving to identify graphite flake size is similar to the A.S.T.M. grain size chart for steels.<sup>4</sup> The other represents four types of association of graphite flakes differing from each other in their distribution or orientation. It is hoped that this brief presentation will stimulate discussion among metallurgists interested in the advancement of the metallurgy of gray cast iron.

Through the latter part of this period of development in the metallurgy of steel, cast iron also has been a subject of much investigation. Studies of the effects of composition and of raw materials, melting methods and solidification rates have resulted in an ability to provide desirable combinations of mechanical properties for each of a wide variety of applications. The mechanism is, at least in part, control of graphite flake size. This valuable work has been handicapped, however, by the lack of a rational system for classification.

In the present work it is not desired to deal with either the control or the effect of graphite flake size. It is, however, desired to point out the variations in flake size, orientation, and distribution that may exist, and to propose the

necessary standards and technique for their measurement.

#### Graphite Flake Size

Figs. 1 to 8, at 100 diameters, illustrate a series of progressively shorter flakes and, in the authors' experience, cover the range of flake size obtainable in sand-cast, gray-iron castings having a section diameter or thickness of from  $\frac{1}{8}$  to 6 in. or larger. It is interesting to note that if the sizes of the A.S.T.M. grain-size chart for steels are transposed into a linear dimension, that is, mean grain diameter, the limits of the range obtained are about 1 in. and  $\frac{1}{8}$  in., respectively, or in a ratio of 8 to 1. In the proposed flake-size chart, however, it has been found necessary to cover a range of from 4 in. to  $\frac{1}{16}$  in. or in a ratio of



FIG. 1 — Flakes  
4 in. or more in  
length.



FIG. 2 — Flakes  
2 to 4 in. in  
length.

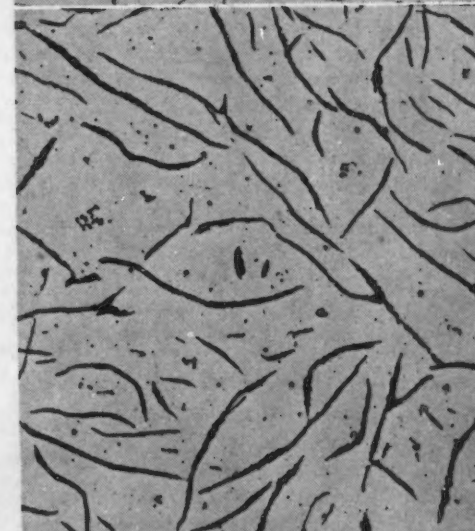


FIG. 3 — Flakes  
1 to 2 in. in  
length.

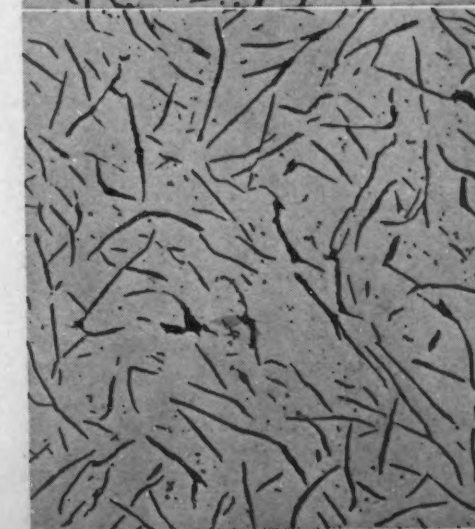


FIG. 4 — Flakes  
 $\frac{1}{2}$  to 1 in. in  
length.

64 to 1. An important result is that the difference in size between adjacent numbers in the latter scale is appreciably greater.

It is interesting to observe at this point that an overall range in size of austenite grains in steel comparable to the range in size included within the proposed flake-size chart actually is obtainable. Extreme refinement and exaggerated grain growth in steel may lead to austenite grains  $\frac{1}{16}$  in. in diameter or smaller on the one hand and 4 in. in diameter or larger on the other.

In the course of preparing the present graphite flake-size chart, a considerable number of micro-sections was examined, representing a rather wide variety in as-cast, section size, and in chemical analyses of irons. Mixed flake sizes, similar in a way to mixed grain sizes in steels, were found in many of these and it was deemed necessary to record all findings as proportions of a given size rather than merely attempting to show overall size ranges within each specimen. This practice, commonly used also for steels of mixed grain sizes, seemed logical because of the probability of thus obtaining more exact correlation with the mechanical properties of the cast irons in question.

The estimation of proportions of predominant flake sizes would be extremely difficult if there were such a thing as random distribution of a wide range of flake sizes. In the authors' experience, however, mixed flake sizes usually exist as groups or areas composed largely of one size with the balance largely of another size. These areas have been found to fall into two general classes: (1) dendrites whose size may vary widely and (2) rosettes or rounded groups  $\frac{1}{64}$  in. or larger in actual diameter.

Since graphite flakes, like any other micro-constituent of metals, are three dimensional, naturally a certain amount of variation in flake size will be found in the most uniform cast irons. Each flake actually is more or less of a saucer-shaped particle and the particular section observed is purely a matter of chance. With an entirely random orientation of particles, this leads to no particular difficulties in arriving at an estimated mean size. However, in such a case as where the flakes are all oriented in re-



stricted planes, it may become necessary to use a range of sizes for a single area.

#### Graphite Type Classification

Questions of distribution and orientation have been encountered in discussing the estimation of sizes and proportions of sizes. In order to include the two former factors in the classification, a chart of standard graphite types is proposed. These types vary in the form of distribution and orientation of typical gray-iron graphite flakes. If it were desired to include the temper carbon type of graphite found in malleable irons, a fifth could, of course, be added and thus compose a system for classifying graphite in all cast irons.

Because of the tendency of graphite flakes to segregate into groups, each of which may have a characteristic flake size, it is important to note that the direct use of the graphite flake-size chart at 100 diameters for comparison with projected images of specimens at the same magnification was rarely practiced in this work. To have done so would have made the estimation of proportions of different sizes highly difficult because of the relatively small area that could be examined at one time.

The desirable procedure seemed to be the use of as low a magnification (and as wide a field) as could be used without too great a sacrifice in the accuracy of the measurement. In general, the accuracy of the measurement was aided by the rather wide difference between adjacent numbers on the scale.

Accordingly a method has been developed (found also applicable to mixed grain sizes in steels) involving the use of a wide-field binocular microscope at comparatively low magnifications. With a magnification of 10 to 25, all or much of the surface of an average micro-section may be seen at one time. Flake-size readings are then obtained by comparison with a standard piece mounted beside the specimen on the stage of the microscope. This standard may be merely a small polished block of stainless steel near one edge of which a series of eight small holes or marks have been inscribed with diameter or length corresponding to the mean actual length of the eight flake sizes (see Fig. 9). With proper illumination, in this case obtained with the small incandes-

FIG. 5 — Flakes  
 $\frac{1}{4}$  to  $\frac{1}{2}$  in. in  
length.

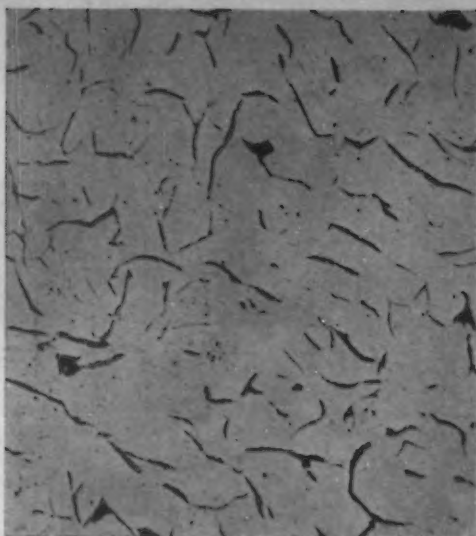


FIG. 6 — Flakes  
 $\frac{1}{8}$  to  $\frac{1}{4}$  in. in  
length.

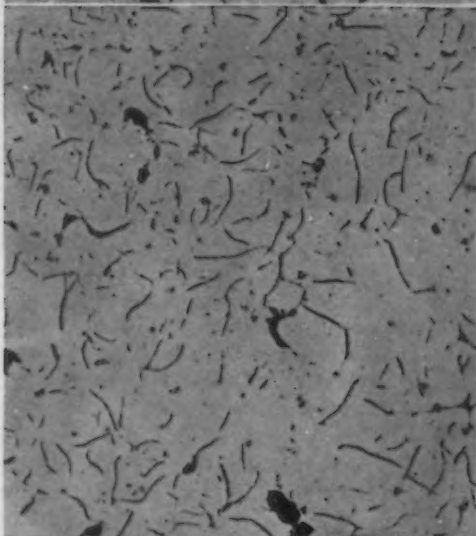


FIG. 7 — Flakes  
 $\frac{1}{16}$  to  $\frac{1}{8}$  in.  
in length.

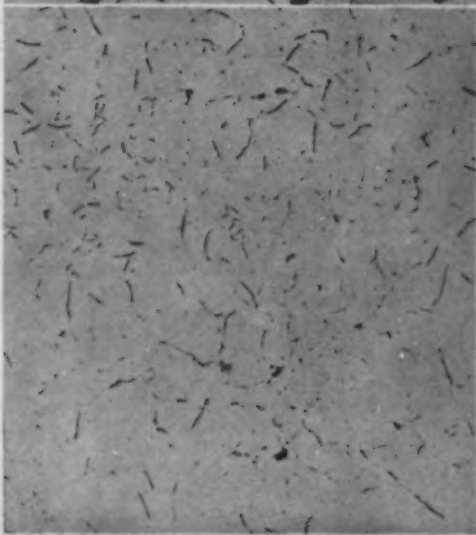
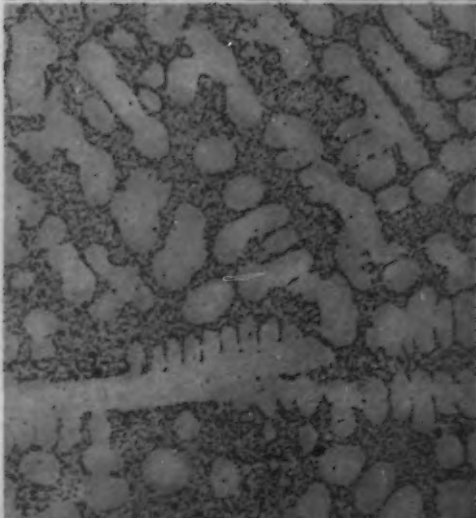


FIG. 8 — Flakes  
 $\frac{1}{16}$  in. or less  
in length.



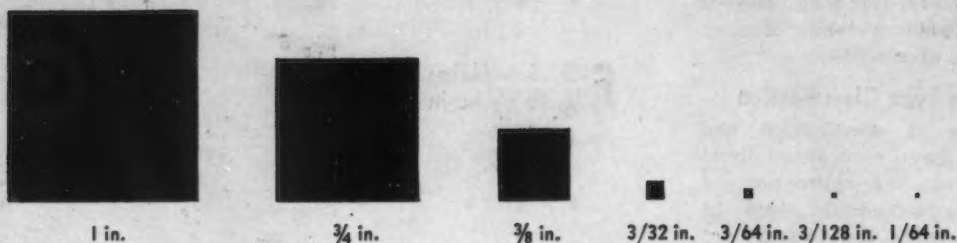


FIG. 9—Comparison standard for observing flake size at magnification of 25.

cent bulb and reflector supplied with the microscope, comparisons between the standard and graphite flakes in the specimen are comparatively simply made, and the exact magnification used is unimportant.

Having scanned the specimen and noted the proportion of each size and type by the method just described, the flake-size chart and the type chart and a magnification of 100 diameters may be used if desired for checking the accuracy of the measurements and observations of type that have been made at lower magnification. This will be especially desirable for the extremely small sizes of graphite flakes.

One further consideration is that of segregation according to physical shape or location in the casting. A condition similar to the

<sup>6</sup>A Vickers hardness testing machine was used.

structural differences in case-hardened steels may exist, wherein a part of the iron will be distinctly different from other parts due to abrupt variations in cooling rate. In such cases two or more such structures in the same iron should be differentiated by classifying them separately as if for different specimens.

The standard scale used in this work was made in the following manner. On a duplicate piece of the stainless material used for the scale, an experiment was performed in order to correlate Vickers<sup>6</sup> load with impression size on this particular material. An ordinary set of gravimetric balance weights was used for obtaining various loads and the experimental results were plotted as weight against length of the side of the square impression. Once this was done, the desired lengths were in-

terpolated from the curve, checked individually for accuracy, and finally the desired series of square impressions was imposed near the edge of the other block. In Fig. 9 is shown the appearance of the standard at a magnification of 25 diameters.

A special eyepiece similar to a grain-size ocular now available on the market for steels could, of course, be developed in conjunction with a standard graphite flake-size chart. Although such a device would require a fixed magnification for actual measurement of size, it could be calibrated at either 25 or 100 diameters and still be used for the estimation of proportions at any suitable magnification. Such an ocular probably would be most easily utilized if the scale were composed of a series of squares or circles of appropriate diameters or units, North cold reduction room,

## Tennessee Coal, Iron & Railroad Co.'s New Tin Plate Development

RAPID progress is being made in the construction of the new tin plate plant of the Tennessee Coal, Iron & Railroad Co. in Birmingham. When completed, the plant will employ 2500 men and

have annual capacity of 200,000 gross tons of tin plate. The job of erecting buildings is roughly half completed. The five buildings shown below are (left to right); Shearing units, North cold reduc-

tion room, tempering mills and cold reduction mill, South cold reduction room and annealing department. The tinning units, assorting room, warehouse, box house and loading dock will be in foreground.





# Protect Fire-fighting Equipment Against Freezing

By A. H. RODRICK



WITH the advent of winter comes the necessity for protecting industry's fire-fighting equipment against freezing. Any fire-fighting appliance not fully ready for use when needed is, figuratively speaking, arson's accessory before the fact, and the responsibility for such a condition is tantamount to managerial neglect. The importance of protecting such equipment is, therefore, so obvious as to require no elaborate argument.

The industrial fire-fighting devices which need to be protected against freezing are: (a) Water pails; (b) chemical extinguishers; (c) water pipes; and (d) automatic sprinklers.

Water pails are made of galvanized iron or steel or of fibre, and are of 3-gal. capacity. They are effective first-aid appliances on incipient fires in ordinary combustible materials. Since the extinguishing agent used is water, granulated calcium chloride (free from magnesium chloride) or common salt (not rock salt) may be dissolved in the water to depress its freezing point.

Salt may be used only when the solution is kept in wooden casks, since a salt solution should never be kept in metal containers and where temperatures lower than zero F. will not be encountered. Two and three-quarters lb. should

be used with each gal. of water, producing a solution having a specific gravity of 1.205.

The table given below of the National Board of Fire Underwriters, based on granulated 75 per cent calcium chloride, shows approximately the temperature at which such a solution, when thoroughly mixed, will freeze.

When calcium chloride is employed a quantity should, of course, be kept in an airtight receptacle in order that the pails may be promptly refilled after use.

## Protection from Freezing

Of the four chief types of chemical extinguishers used in industrial establishments; namely, soda-acid, foam, carbon-tetrachloride, and carbon-dioxide, only the soda-acid and foam types need protection against freezing. Whenever they are located where continued

temperatures lower than 40 deg. F. may be encountered, they must be enclosed in a cabinet. The National Board of Fire Underwriters has laid down the following specifications for constructing such cabinets:

"1. The inside dimensions of enclosure shall be as small as practical, but not to interfere with the quick removal of the extinguisher.

"2. Walls shall be tightly constructed of wood, not less than ½ in. thick; the inside of cabinet to be lined with ½ in. wallboard, or its equivalent, so arranged as to leave a ½ in. air space between the inside and outside walls.

"3. Door shall be of double construction, closing into a rabbit, hinged and held closed with a spring latch.

"4. Near the bottom of the door, and at a point opposite to the incan-

TEMPERATURES AT WHICH CALCIUM CHLORIDE SOLUTIONS FREEZE  
To Make 2½ Gallons Anti-Freezing Solution

Approximate Freezing Temperature Degrees Fahrenheit	Water	Calcium Chloride	Specific Gravity	Degrees Baumé
10 deg. ....	2 gal. 1 qt.	5 lb.	1.139	17.7
Zero .....	2 gal. 1 pt.	6¼ lb.	1.175	21.6
10 deg. below .....	2 gal.	7 lb. 6 oz.	1.205	24.7
20 deg. below .....	2 gal.	8 lb. 6 oz.	1.223	26.9
30 deg. below .....	2 gal.	9 lb. 2 oz.	1.246	28.6
40 deg. below .....	2 gal.	10 lb.	1.263	30.2

descent lamp, the door shall be double glazed (size of glass not larger than 4 in. x 7 in.), with double strength glass, and air space of  $\frac{1}{2}$  in. maintained between the glazing. The outer glass should be clear red (or blue) so that the lamp used for heating purposes may be readily observed, and also the location of the extinguisher indicated.

"5. At a point about 4 in. up from the bottom, there shall be provided four  $\frac{1}{4}$  in. iron rods set into the sides of the cabinet, and arranged to carry the extinguisher.

"6. Under these rods, on the back of the cabinet, shall be mounted a 3 in. conduit box and receptacle. All wiring shall be done in accordance with the National Electrical Code, by means of flexible or rigid conduit, or approved reinforced portable cord.

"7. An incandescent lamp of sufficient capacity (not less than 50 watts) to keep the temperature in cabinet above freezing point, shall be continuously burned during cold weather."

This type of enclosure is for use in climates where temperatures below zero Fahrenheit are encountered; where the temperature does not fall below zero Fahrenheit, enclosure may be constructed of  $\frac{3}{4}$  in. material without the double wall.

If the wheeled type of soda-acid or foam extinguishers (17- and 33-gal. capacity) is installed, they, too, must be kept in a heated enclosure when located where continued temperatures lower than 40 deg. F. may be encountered.

Salt must never be introduced into chemical extinguishers to prevent freezing, owing to the resultant corrosion of the copper container, and the generation of chlorine gas when the extinguisher is operated.

It matters not whether water for fire extinguishment is supplied from city waterworks or by fire pumps, water pipes should be protected against freezing if the water is expected to flow when needed for a fire. However, should such a pipe freeze, care must be exercised that the method employed in thawing it does not cause a fire.

### Thawing Frozen Pipes

To thaw water pipes that have become frozen, the frozen section should be wrapped with cotton cloth and hot water poured upon it until the ice in the pipes gives way. Rags on the floor at the base of or under the pipe will absorb the waste water. A torch or open flame of any description should never be used to thaw pipes. To wrap the pipes with oil-soaked rags and set them on fire is almost incendiaryism. Pipes are invariably adjacent to walls or partitions where there is an ascending current of air to feed and spread a flame. Even if the flame does not start a fire its sudden local heat may cause the pipe to break and flood the premises.

To prevent automatic sprinkler equipment from freezing, the man in charge should be fully posted as to the purpose of every valve and pipe. Tanks must be protected, and special tank-heating equipment of adequate capacity provided when necessary. In the original installation, supply pipes or risers in low spaces under ground floors are generally protected against frost, but all sprinkler mains in exposed locations should be enclosed in weather-tight insulated and heated conduit or boxing. Snow and ice should be cleared away from hydrants and post-indicator valves immediately after storms. Outside tanks should be heated by steam pipes in the bottom of the tank near the outside. The steam pipe riser should be run up next to the down-flow pipe and the latter should be well insulated. In monitors and other exposed places insurance companies, as a rule, allow sprinklers to be shut off during the winter.

### Unheated Sprinklers

When sprinkler protection is needed in unheated places the dry-pipe system is used. With this system a large dry-pipe valve is necessary which must be located in a heated section of the plant. Unless located in constantly heated rooms, these valves should be installed in special closets in order to safeguard them from freezing. The National Board of Fire Underwriters in its pamphlet, NBFU No. 13,

gives sketches for drypipe valve enclosures as illustrations of those already in successful use. The closets should be of tight construction, and a temperature of at least 40 deg. F. should be maintained in them by means of steam pipes, radiators, electric or gas heaters. If gas heaters are used the flame should be protected in an approved way. The dry valves should be inspected to see that they are in working order, not leaking, and that alarm connections and gong are in operative condition. Should a valve trip and, without giving an alarm, admit water into the pipes where it may remain undiscovered, freezing is liable to occur with disastrous results. Piping should be thoroughly drained, and all pipes should drain back to the dry valve. In cases where this is impossible, drip valves should be installed at low points and carefully watched during cold weather. Drip valve outlets should be plugged as a safeguard against leaking or tampering. Before cold weather sets in the system should be thoroughly drained of all moisture. As long as the pipes of dry systems are kept filled with air under suitable pressure the dry system is safe against freezing.

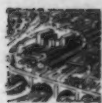
As a final precaution against freezing of fire-fighting equipment, all buildings should be put in good repair so that no unnecessary cold air will be admitted. This includes replacing broken window panes, and glass in skylights and roof monitors; adjusting or weather-stripping loosely fitting doors and windows, or making them tight in some other way; closing spaces near the ground level where air may enter and circulate under the floors of buildings that have no basements or foundation walls; and stopping up all other openings through which cold air may enter. All doors and windows should be kept closed, especially shipping-room doors which should not be left open longer than is absolutely necessary. Particular attention should be given to exposed places such as hallways, entries, stair towers, elevator shafts, etc. When these and similar steps have been taken it will be easier to supply adequate heat which is a most necessary protective measure.







## Some Advantages of a Rural Community From the Personal Relations Standpoint



THE advantages and problems inherent in the personnel management of an industrial plant located in a rural community have been discussed before in the columns of *IRON AGE* as they have been experienced by the Batcheller Works of the American Fork & Hoe Co. in Wallingford, Vt. Previous discussions have centered around problems arising from the depression. Now that this company's business has returned to normal it is possible to consider them from another angle, and as the economic and social situation is extremely simple in this environment a very clear idea may readily be obtained as to how these forces operate.

One of the very important mat-

By R. C. TAFT

Manager, American Fork & Hoe Co.

o o o

ters which is provoking much thought and which is the cause of considerable apprehension is the well-known one of technological unemployment. The way it has worked out here is reassuring. It may be a very strong argument for industrial decentralization as well. At any rate the effects are easily observable in this environment and they are illuminating. The American Fork & Hoe Co., like all other progressive manufacturing concerns, has of course installed considerable labor saving machin-

ery. This naturally is essential if it is to stay in business. As a result it is now possible to turn out the same volume of goods as a few years ago with something like 25 per cent less employees.

Actually only about 10 per cent less are needed. This is because of certain refinements and elaborations which the changed times call for. For example, it was formerly sufficient to paste a label on the handles of the pitchforks, hoes and other hand agricultural tools which are made here. Now the trademark and identification of the maker is burned into the wood with a die and entails considerably more labor. Another refinement is that, as the goods are made and sold on a quality rather than price basis, they now receive a wrapping in



conformity with the modern trend in packaging. Great stress is laid on the finish and it must be adequately protected until each item reaches its ultimate purchaser. Thus additional labor is required to take care of this detail. There are others, but these two very obvious ones will serve to illustrate what is meant.

Thus 15 per cent of the 25 per cent of labor saved by the use of modern machinery is needed to take care of the new requirements. The question then arises as to what becomes of the other 10 per cent. This also is easy to account for here in this small town where everybody knows what is going on. The answer simply is that as Wallingford is one of the main through routes to Montreal several garages, filling stations, roadside stands, and the like have sprung up. In addition there is a bakery in the village where many of the housewives now buy their bread instead of baking it themselves. All in all the changing times which have thrown people out of employment in this plant have also provided employment in these other lines. That is, in normal times this community has no unemployment. And even during the depression the situation here was much less acute, and hardly to be compared with that in urban industrial centers.

A number of interesting observations may be added. One is that the population of Wallingford has not increased during the period when labor saving machinery was being installed to an extent which

was at all serious. This was done gradually with the result that technological unemployment never became a problem. Of course all of this has been very different in the large metropolitan centers where it is not possible to step from one job into another so easily, and where the existence of other opportunities is by no means so apparent. Where the management has a feeling of social responsibility, and it is safe to assume that this is the rule rather than the exception, this feature of a rural location for an industrial plant is a great advantage.

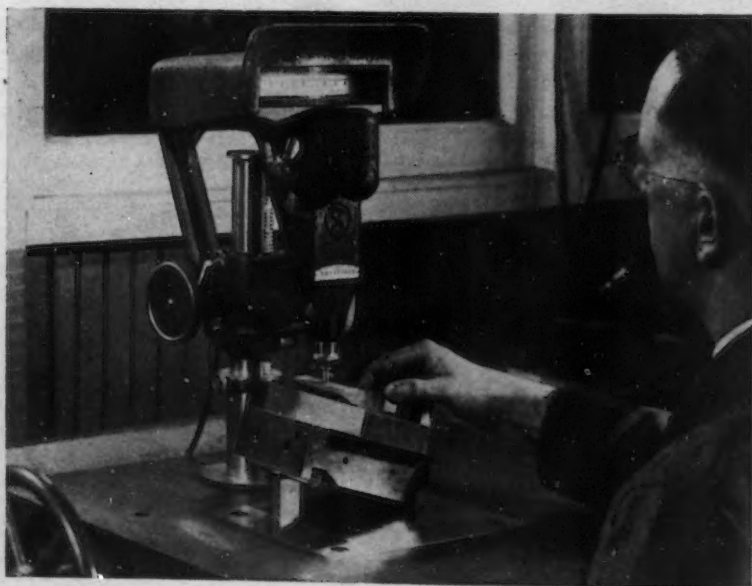
Such conditions make for stability of labor. There is only a limited turnover. Men are usually kept on as long as they are able to work and when they get too old to work they are pensioned. There are sick benefits as well. Most of them own their homes and have some land which they cultivate, which helped greatly during the depression as was explained in the previous articles. There are no labor problems. However, it must be borne in mind that the excellent personnel relations existing in this plant have been achieved by embracing the opportunity which exists in such an environment. They are by no means inevitable merely because of the environment.

The policy of holding on to old employees as long as possible of course makes the matter of introducing an adequate amount of new blood of great importance, as the workers must be replaced as they reach the age of retirement, and an

organization exclusively of old men would hardly be desirable anyway. The manner of introducing young men into the group is decidedly informal but effectual. When it becomes apparent that some job is going to require one or more new men for any reason the new ones are hired from among the more promising material in the village and set to work alongside of those they are to replace eventually. This is the way they receive their training. Residents of the village are always employed if any are to be had and as a matter of fact there is rarely any difficulty about this as the employment is attractive. The plan is followed of operating at as great a reduction of hours as practicable during the summer so as to give the men a chance to work on their small farms during the growing season. This is an advantage to the company as there is a slack period in the demand for the hand agricultural implements which it manufactures, and arranging to slow down at a time when the employees can do other profitable work is not difficult. It also makes it possible for the men to build up this extra resource and provides a much higher degree of economic security, as was well demonstrated during the depression. It is also very desirable from the standpoint of the management because it develops a much more stable type of personnel, and a much higher degree of contentment as is demonstrated by the very conspicuous absence of labor turnover.

A SINE bar carrying a special fixture is used in connection with the Sheffield visual gage at the plant of the Michigan Tool Co., Detroit, for checking the rack teeth of its gear shaving machine. Due to the very close tolerances to which automotive gears must be held, it is essential that these rack blades be extremely accurate and uniform. Rack blade tolerances are held to a fraction of a "tenth." Readings are taken on both sides of the blade and entirely across its face between gashes.

Although it is not apparent from the photograph, this visual gage has a total capacity of 36 in. The gage column passes through the cast iron table shown and is raised and lowered by the hand wheel at the left. The sine bar rests on a ground and lapped plate set in the table surface.





# Flight and Apron Conveyors, Bucket Elevators, Skip Hoists

CHAPTER 15 of a comprehensive series on the Economics of Materials Handling Methods and Equipment.



THE continuous flow principle of handling materials has recently inspired the publication of a handsome little brochure by F. E. Moore, president of Mathews Conveyor Co. This brochure, entitled "Applying Natural Laws to Production," is a compact, well-written and scholarly effort to enunciate in brief space the fundamental principles underlying successful industrial production methods. Industrial executives will find that it sums up clearly the basic facts of their own experience. The theme of chapter 6, "The Function of Management," is so completely in harmony with the text around which I have been building this series of materials handling discussions that I shall open this one with certain quotations from it:

"The pioneers of modern management principles pointed out that executives in industry correspond in functions to the officers in an army . . . staff executives, like staff officers, should be concerned with strategy; and line executives, like line officers, with tactics. . . . As industrial operations today employ more and more technology, the line or department executives tend to become extreme specialists, each responsible only and directly to the general management.

"But unless there is alert, coordinating general management at the top, visualizing the operation of the business as a whole, the

tendency of departmental specialization and autonomy is toward disruption and disorganization; and instead of one business operating as a unit, there are actually many businesses only nominally related to each other. And if the general management tends to be financially-minded or sales-minded rather than production-minded, the disruptive tendency of departmental autonomy is less likely to be corrected by coordination.

" . . . In the long run in any competitive economy, the size of the market for any product depends upon price, and price depends upon the cost of production. Thus, sales policy and market strategy ultimately depend upon how efficiently production is organized; and the future of any business, considered as a financial problem, is equally determined by its ability to solve production problems as rapidly and as effectively as competitors can. . . .

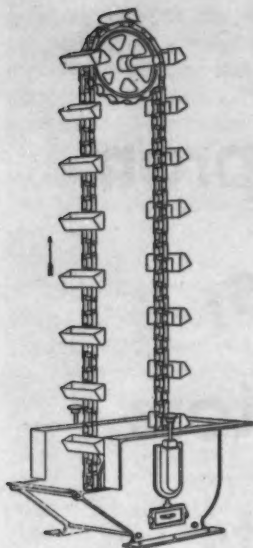
"Somewhere in every successful expanding business, somebody must constantly visualize production as a whole, and supply the coordinating thinking required to keep the

production process one of continuous flow. . . . The gains to be made by the simple organization of production in functional sequence, by the elimination of manufacturing bottle-necks, by better use of space and time, are often more important than the gains to be made by installing new and faster machinery or improving some individual processes."

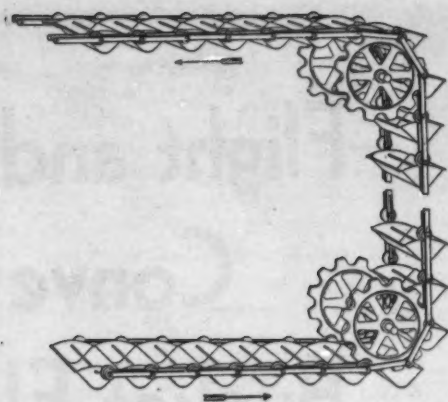
In another chapter Mr. Moore says, ". . . analysis of almost all modern production shows that a larger part of the overall production time is consumed in handling materials *between* processes than is consumed in processing operations themselves. In many plants the simple re-arrangement of departments or equipment so that work in process flows continuously in one direction, would so greatly reduce overall production time or the amount of handling and re-handling, as to effect a surprising reduction in the cost of production. In the automotive industry organizing the flow of materials . . . is almost the sole cause of the astonishing efficiency of this industry. More recently the same

By FRANCIS JURASCHEK

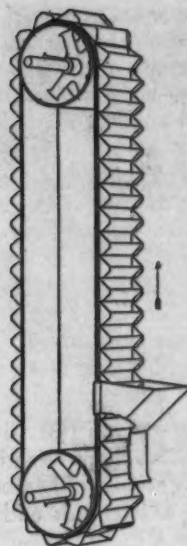
Consulting Editor, *The Iron Age*



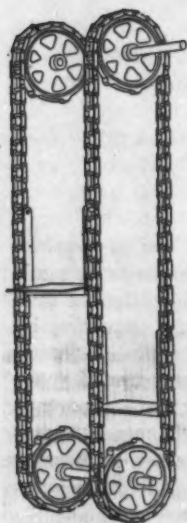
Centrifugal discharge bucket elevator



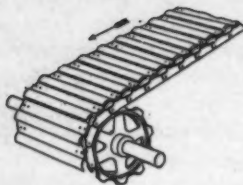
Overlapping bucket gravity discharge elevator



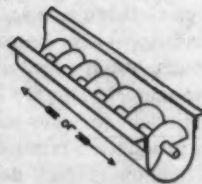
Continuous bucket elevator



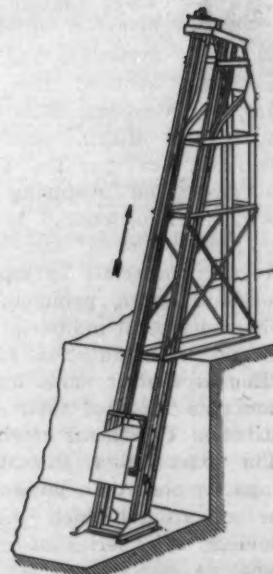
Tray elevator



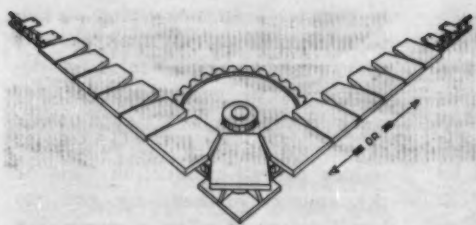
Apron conveyor



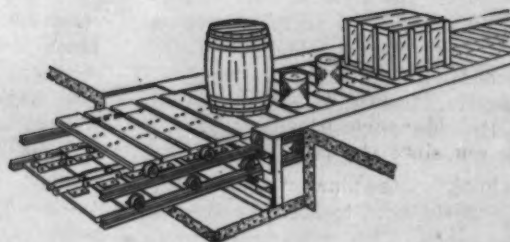
Screw conveyor



Skip hoist



Floor conveyor



Slat conveyor

*These are all Members of the Conveyor Family*

*Diagrams courtesy Chain Belt Co.*





**J**EFFREY scraper conveyor handling coal in a boiler house. Steel scraper plates are mounted on rollers and propelled by a single strand of link chain.

principle has given the steel industry the continuous strip and sheet mill, tripling the tonnage of sheets in a few years."

#### More Than Labor Saving

The historical development of materials handling equipment parallels that of almost all other mechanical devices. Materials handling equipment design has been dominated by the idea of the substitution of its superior strength and extensibility for the lesser capacity of the human burden bearer. As in other mechanical devices, materials handling equipment has sought mainly to imitate more quickly or more powerfully simple human tasks; and this idea has been exploited to the limit. As Mr. Moore says, "the newer concept of materials handling equipment as a part of the productive process itself, and not merely as the transportation of materials in and around the plant, is as recent as the modern concept of Scientific Management. Both have arisen since the beginning of this century." Actually, in its broader aspects, the laws of materials handling are few and simple.

"The flow of materials should be so organized that intermittent, or batch, production should be eliminated wherever possible.

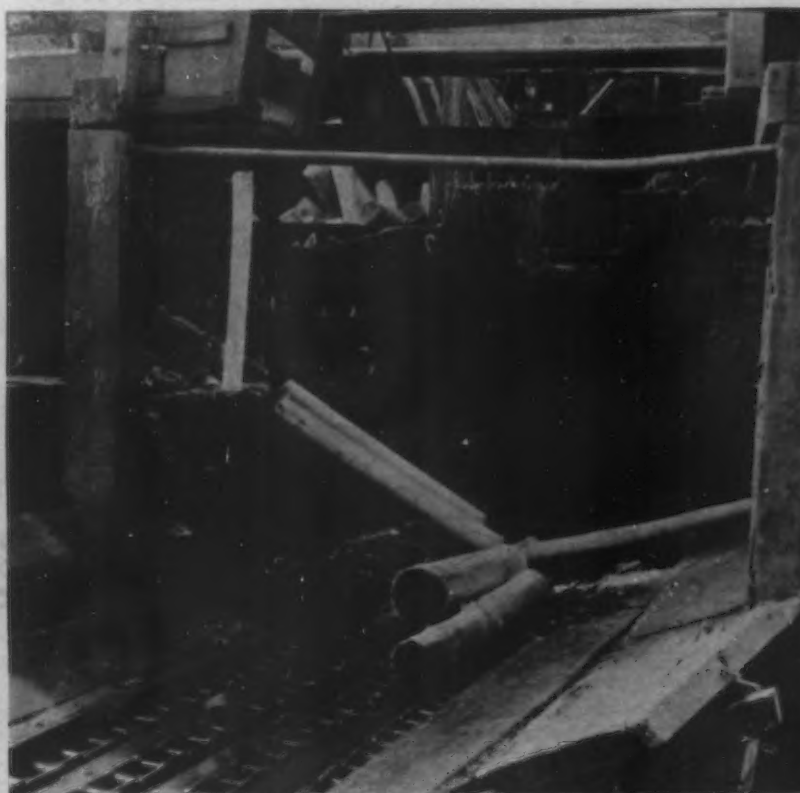
"Materials handling at each step should be considered an inte-

gral part of the operation to which and from which it leads.

"As the department or the plant must be considered a unit, the slowest process or department sets the pace, and the first step to-

wards increased efficiency is the locating and improving of such bottleneck situations.

"The materials handling equipment should be considered as the arterial system of the factory or-



**C**HAIN Belt drag chains pull logs up an inclined chute at a pulp mill.



JEFFREY steel apron conveyor delivering slag received through plate feeders from receiving hoppers to a bucket elevator.

ganism. In an ideal layout, the processes, equipment, and even the buildings would be planned to accommodate the continuous flow system of handling.

"And finally, though a completely organized materials handling system must be designed and engineered to meet the specific situation existing where it is to be used, such a system should be built up out of standard parts or units which can be replaced if need be, or so that the system can be extended or re-arranged to meet new conditions, or so that it can be installed from department to department or from building to building without shutting down the whole plant."

Certainly there is a great deal of solid nourishment in this little booklet; of the kind that is the product of a good many years of practical experience in the field, of keen-witted observation, and of thorough consideration of many diverse and seemingly unrelated facts. Its philosophy is as broad-minded as it is acute.

#### Continuous Flow

In a previous article of this series it was said that conveyors motivate the continuous flow principle. In that and in succeeding articles I have attempted to show the fundamental importance of conveyors of all types as a means of co-ordinating production; of tying one process to another with the minimum expenditure of time

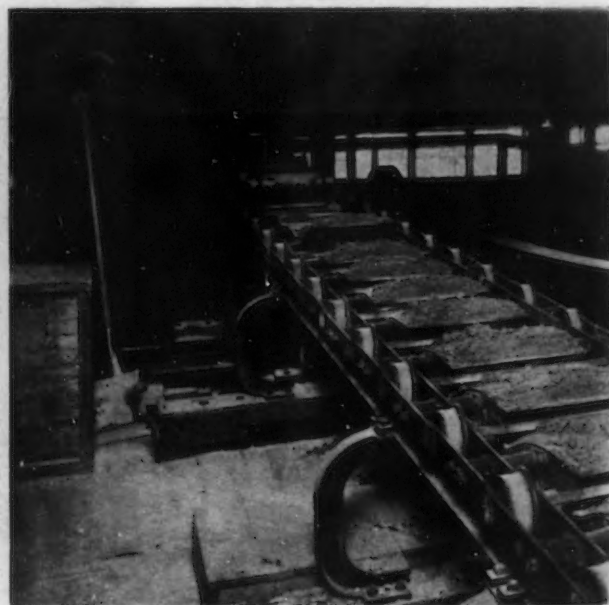
and effort. Due to limited space, however, there were several types of conveyors which could not be described. These will be discussed briefly here, and illustrations of their use given.

Flight conveyors (sometimes called drag scraper conveyors) are designed to convey non-abrasive materials horizontally or along inclined planes up to about 35 degrees from the horizontal. They consist of one or more lines of chain, or chain links, carrying transverse plates at regular intervals which pass along a trough. These plates, or flights, push the material through the trough. The single chain type of flight may slide in the trough with the material, or be so designed as to slide or roll along separate tracks by means of ears or rollers fastened to the flights. The double chain type has flights suspended between two strands of roller or link chain, eliminating all sliding friction except that of the material handled itself. Flight conveyors

are commonly used on boiler-house coal bunkers, ground storage piles, retail coal pockets, etc. They are low in first cost and, due to their slow operating speed, have long life and low maintenance.

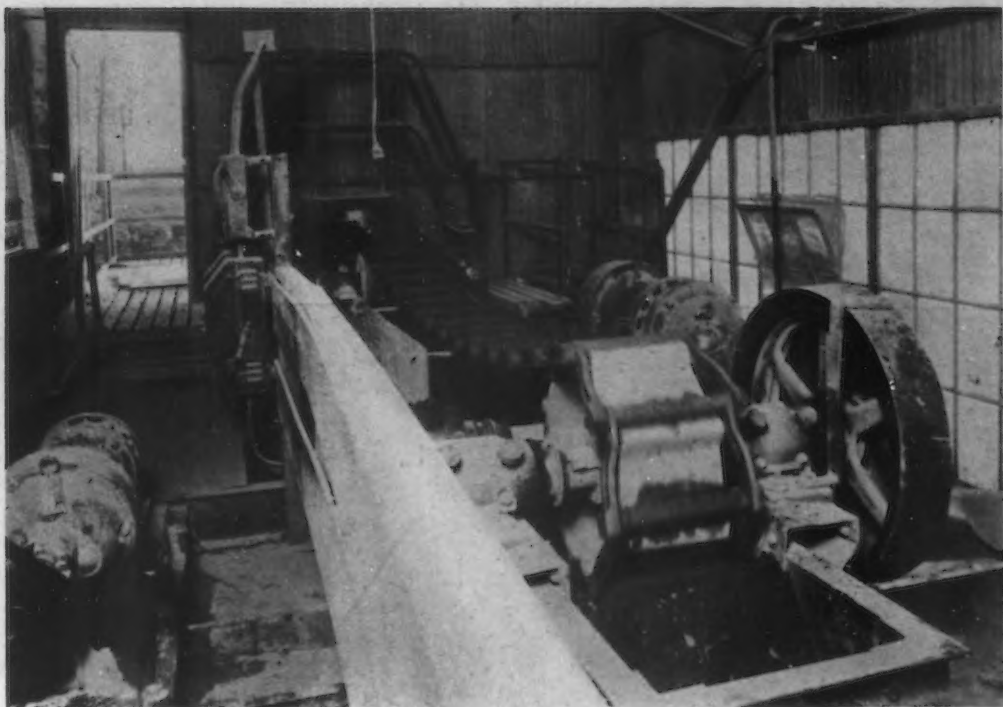
Several variations of the flight conveyor are likewise available. The drag chain conveyor has no transverse plates, or flights, but consists of a wide link chain sliding in a narrow trough, partly conveying and partly scraping the material along the trough at very slow speeds and in small capaci-

JEFFREY pivoted bucket conveyor handling





CHAIN Belt cast steel drag chain handling clinker at Louisville Cement Co., Brixment, N. Y.



ties. It is commonly used for removing ashes in boiler-rooms, handling sawdust, wood-chips, etc. When the chain is equipped with small claw-like lugs, it is admirably adapted for handling logs and pieces of lumber either over a horizontal table, or through an inclined V-shaped chute. The conventional drag chain conveyor may be adapted for the handling of abrasive materials by making the drag chain out of heavy cast iron or cast steel, with the trough made

of similar wear-resisting material.

Vertical flight conveyors have no troughs. Instead the flights are flat, horizontally placed plates, or swinging trays, or curved hooks to hold cylindrically shaped objects, or simply rigid arms across which flat packages or pieces of material can be laid.

Bucket conveyors and elevators are developments of the flight conveyor in which buckets are substituted for plain flights, and in which the trough is discarded. In

the pivoted bucket conveyor the buckets are pivotally suspended between two strands of roller chain and travel always in an upright position, permitting material to be conveyed horizontally, vertically and again horizontally without spillage. The buckets are generally cast in one piece, of malleable iron with overlapping lips, and are suspended on the chain by through rods. This type is well adapted for handling heavy and abrasive materials, and is used in steel mills,

cement plants, on mining operations and in power plants, to handle coal, coke, stone, ore, cement, clinker and ashes.

In the gravity discharge elevator conveyor, the buckets are rigidly attached to a double strand of roller chain. The bucket line elevates the material vertically, and after turning the upper corner their rigid fastening causes them to turn over and discharge. On a succeeding horizontal run the same buckets, in the discharge position, may be used to push the material through a trough to any desired discharge point along the trough. Such mechanisms are particularly well adapted for handling friable as well as other non-abrasive materials such as anthracite and bituminous coal. They are widely used in boiler-house coal-handling systems, in locomotive coaling stations and in retail coal yards.

Continuous bucket elevators are used for elevating materials at high capacities at speeds up to 100 ft. per min. The buckets are mounted on a single or double strand of chain, or on a belt, and are close together in a continuous line. The front of each bucket going over the head sheave serves as a discharge chute for each succeeding bucket. The loading end should be equipped with a loading chute for feeding the material directly into the buckets without

ding silica sand in a refractories plant.



spillage. Such conveyors are adapted for handling heavy and gritty materials such as sand or stone, as well as materials like coal when breakage is of no importance.

Centrifugal discharge elevators are widely used for handling all kinds of loose bulk materials such

to be used. A grating over the loading hopper will prevent oversize lumps entering and causing damage to the mechanism.

#### Apron and Floor Conveyors

An apron conveyor may be described as a continuous series of beaded, overlapping pans mounted

uniform flow of material. They carry side, or skirt plates, to prevent the material spilling off the sides of the pans. When these skirt plates are low, or are omitted altogether, and the pans are wide, apron conveyors make admirable picking tables.

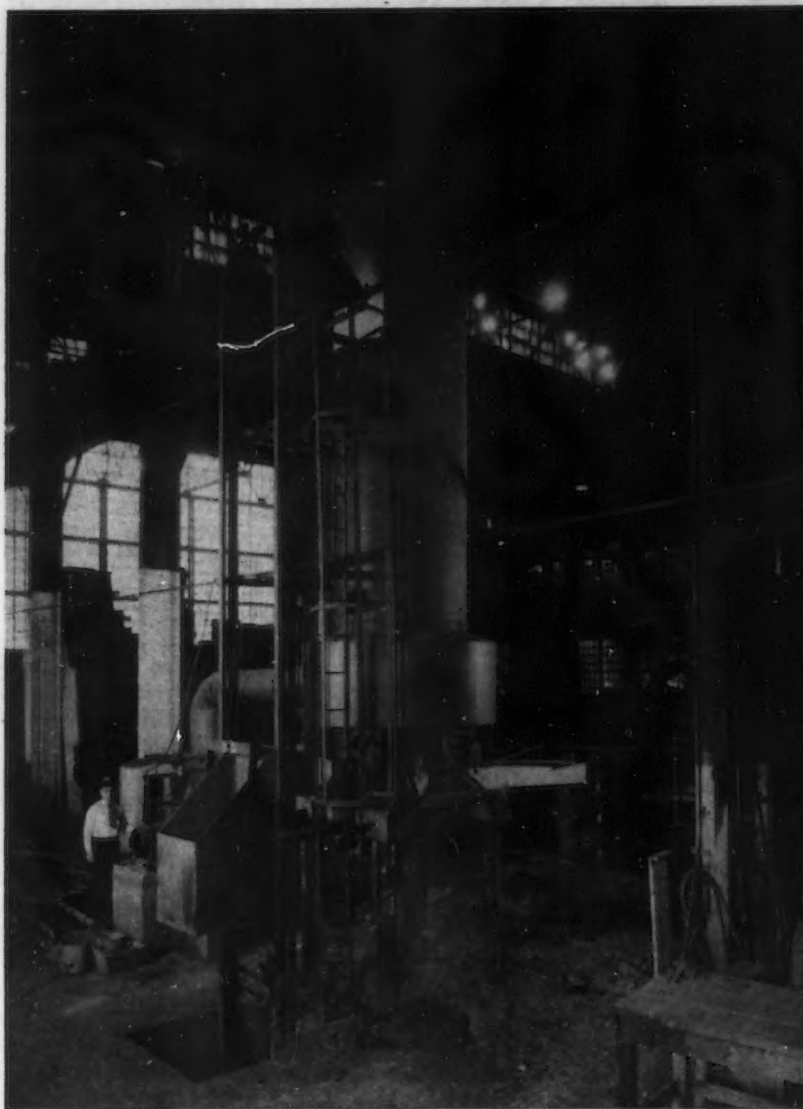
Floor conveyors are formed of slats mounted on a double or triple chain, with the tops of the slats set flush with the floor in which the conveyor is located. If desired, the slats may be so shaped as to permit the conveyor to turn a corner.

A screw conveyor is a form of flight conveyor in which the flight is helically mounted on a longitudinal shaft turning in a trough. There is no forward movement of the shaft; as it rotates, the screw blade of the flight pushes the material along in the semi-cylindrical bottom of the trough. Screw conveyors are widely used to feed crushed coal to furnaces. The feed is slow but extremely uniform.

#### The Skip Hoist

The skip hoist differs from all other types of conveyors so far considered, in that it is a reciprocating mechanism. It deviates essentially from the continuous flow principle which characterizes conveyors proper, and is the connecting link between them and all types of strictly up-and-down elevators and mine-hoists. The skip-hoist finds its economical reason-for-being in the fact that it handles large unit loads on high lifts very successfully. It will handle heavy, abrasive and bulky materials containing large lumps equally as well as finer materials such as coal, coke, stone, sand, gravel, ore and ashes. Likewise, each skip-load can be a pre-determined quantity, which further adapts it to the charging of cupolas, furnaces and so forth.

Skip hoists may be single bucket, counter-weighted or non-counter-weighted, or double bucket counter-balanced. Bucket capacities may range up to 100 cu. ft. or more, for loads weighing up to several tons. Control may be manual, semi-automatic electrical or mechanical, or fully automatic. Safety devices commonly used include electrically operated brakes and slack line limit switches.



**W**HITING skip-hoist cupola charger at Continental Roll & Steel Foundry Co. plant, East Chicago, Ind.

as coal, grain, ashes, salt, etc. Because of its comparatively high speed, this type of elevator is not generally recommended for continuous operation. The buckets are spaced on a single strand of chain, or on a belt, and discharge is effected by centrifugal force as the buckets pass quickly over the head sheave. The size and quantity of the lumps to be handled determines the capacity of the buckets

on a double strand of roller chain. These pans form a continuous, moving highway until they pass over the head sheave, when they may open, if desired, or remain an overlapping band. The material to be handled, such as run of mine coal containing large lumps, is carried on top of the pans and can only be discharged over the head end. Apron conveyors run at slow speed and deliver a continuous,





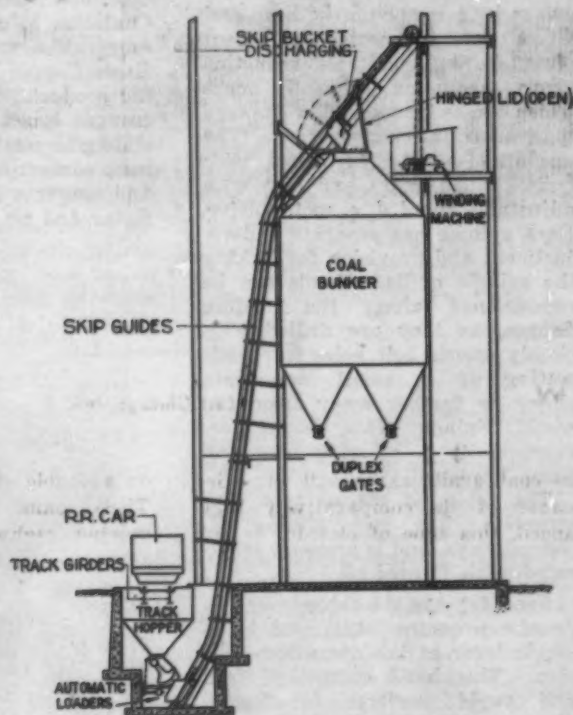
**C**HAIN Belt steel apron conveyor cooling flywheel castings at Nash Motors foundry, Kenosha, Wis.

In its original form the skip hoist consisted of a simple bucket suspended from a cable which was carried over a head sheave to the winding drum of a hoist. The bucket was shortly equipped with wheels to run on guide tracks and to cause the bucket to approach the tripping mechanism surely and safely. All early installations were hand-controlled; the loading of the bucket being one hand operation, and the starting of the hoist being a second. The operator required considerable time to develop the necessary skill and caution for successful handling. This simple hand-operated unit has now largely been replaced by mechanical loaders for loading a definite amount of material automatically into the skip bucket, and complete electrical or mechanical controls for operating the hoist mechanism. Today most skip hoists are designed and installed as fully automatic equipment, placed in service generally by means of pushing a button. The bucket is loaded automatically, and when so loaded the controls function so that the bucket ascends to the dumping position at the top of the runway, discharges its load, returns to the loading position in the pit, and continues the same cycle of operation for as long a period as the

service is required. No further attention is required from the operator except that which will insure a free flow of material to the loader in the pit.

The hoisting runway on which the wheeled skip-bucket travels up and down may be vertical, inclined, or a combination of vertical and inclined, as circumstances dictate. At the top of the lift there may be a short horizontal run before the bucket is tripped for discharge, or the bucket may be tripped at the top of the run, and continue in the discharged position to push the material along a short horizontal trough to a suitable discharge point. The hoisting engine comprises a reel on which the hoisting cable winds and unwinds, connected by suitable gearing to an electric motor, or to any other desired type of prime mover.

The principal uses of skip hoists in manufacturing plants are to fill coal or coke bunkers, to take ashes from boiler-houses to an outside storage bin for later removal by railroad cars, to charge cupolas in foundries, and to charge furnaces in steel mills.



**PALMER-BEE** balanced double skip-hoist installation at Jones & Laughlin plant, Aliquippa, Pa.

## Unit-Head Miller Convertible to Suit Various Work

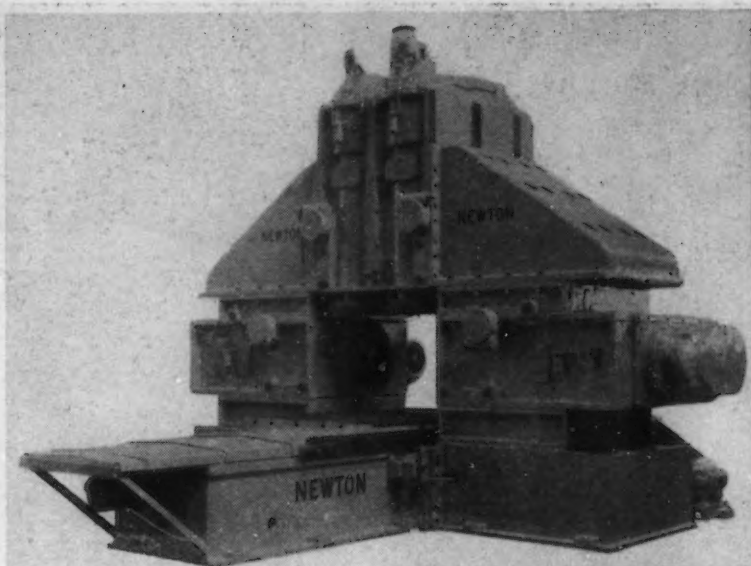
A NEW line of milling machines designed to permit converting single-purpose units into machines for future work has been announced by the Newton division of the Consolidated Machine Tool Corp., Rochester, N. Y.

Designated as a unit-head, box-type milling machine, the machine is made up of several individual milling units on a planer-type milling machine base. The unit illustrated, for milling the top, bottom, sides and ends of tractor transmission cases in two operations, has two horizontal head units and two vertical units, plus an auxiliary vertical spindle for cleaning out the cut between the two large vertical cutters. If required for work necessitating, say, four horizontal spindles the same machine can easily be arranged accordingly, by transposing the independently-driven vertical heads and substituting a fill-in piece at the top to complete the girt. The unit heads can also be reset in any position—horizontal, vertical or at an angle.

Each spindle head is individually driven by a motor on the head and direct gear connected by silent pinion through suitable reduction gears, including pick-off gears which can be transposed or changed to give various cutting speeds. The machines can be furnished with quick-change gears and also with adjustable speed d. c. motor drive. Each spindle has separate end-adjustment and provision for locking the spindle quills. Heads can be repositioned along the holding flanges, as they are drilled with closely spaced bolt holes to permit setting up in small increments closer or farther away from the work. Spindle gears are of herringbone type, of wide face and flame hardened.

The table, of planer type construction, has self alining V-shaped ways, and is pressure lubricated with filtered oil.

Feed drive to the table is by hydraulic pressure, controlled by a single lever at the operating position. This hand control of feed and rapid traverse is supplementary to automatic feed, regulated by adjustable trip dogs. Hydraulic screw or cylinder feed, or



mechanical screw feed can be provided. Each head is independently lubricated with filtered oil under pressure, and the system includes visible oil flow gages.

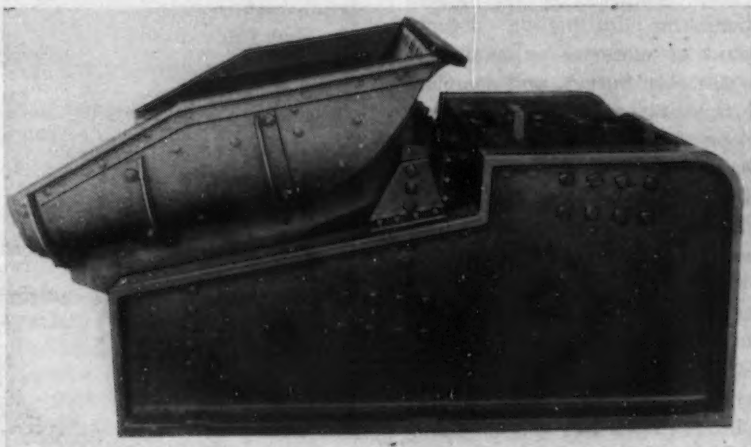
A device consisting of a jointed arm attached to the rear of the machine to facilitate attaching or removing heavy cutters is a feature.

## Electric Vibrating Ore and Coke Feeder

A NEW type of electro-magnetic feeder to handle ore, rock, chemicals, or other material that requires a highly uniform feeding rate, has been developed by Allis-Chalmers Mfg. Co., Milwaukee, in cooperation with engineers of the Utah Copper Co. who originated the product. Standard alternating current is used, and there are no sliding or rotating parts. As there is no contact between the armature and magnets or pole pieces in the motor and no sparking, the feeder

may be used in explosive atmospheres.

The feeder may be had in two types, suspended, or rubber mounted on the foundation. It can be built in any size or form of deck to suit the application, and can be supplied in types to handle material at high temperatures, in fully-enclosed types for dusty materials, or in tubular types for special uses. In the steel industry, the feeder is being used for limestone, ores, coke and sinter.



THIS electro-magnetic feeder is available in different sizes and types for various materials, requiring highly uniform rate of feeding.



## Designs Band Saw For Foundry Use

THE Wells Mfg. Co., Three Rivers, Mich., has placed on the market the new upright saw here illustrated, designed particularly for foundry work.

Adaptability to a wide variety of work is a feature. The machine has nine speeds, ranging from 60 to 1400 ft. per min., and has a throat clearance of 14 in. vertically and 14½ in. horizontally. It may be used in an upright position for sheet metal, pattern work, sawing off of sprues, or for other work for which a rigid upright saw is applicable.

The table is arranged to tilt 45 deg. right and 10 deg. left. The upright saw frame is hinged at the bottom and may be released and fed into the stock automatically. The stock is clamped on the



THE machine may be used in an upright position for sheet metal, pattern work, etc., or the frame may be swung down to the floor for the cutting off of gates and risers of large castings. Speeds range from 60 to 1400 ft. per min.

table with the vise shown in the foreground of the illustration; by using the T-slots and clamps, a greater variety of work may be done.

The upright frame may be swung down to the floor for the cutting off of gates and risers of castings that are too large or too heavy to place on the table. The capacity at this point is 14 x 18 in. Bar stock up to 6 in. may also be cut in this position.

In addition to the foundry, pattern shop sheet metal and maintenance work, this machine, designated as the No. 7-B, may be used for cutting structural shapes, pipes and tubes. It saws squares, angles or compound angles. Used at high speed, it may be equipped with a ¼, ⅜ or ½-in. wood band saw for pattern shop work.



## New Line of Horizontal Hydraulic Broaching Machines

AMERICAN BROACH & MACHINE CO., Ann Arbor, Mich., has developed a line of horizontal hydraulic broaching machines in seven sizes known as the Type H. The machines are available in normal capacities from 6 to 20 tons and the corresponding maximums of 9 to 28 tons, and stroke length of 36 to 60 in. On the smaller size, cutting speed is 10 to 28 ft. per min. and on the larger from 17 to 25. The return speed varies from 40 to 45 ft. per min. The unit is designed to handle both internal broaching and surface-broaching operations. Although primarily designed for continuous production of duplicate parts, these machines also can be set up easily for short runs on different types of work-pieces merely by substituting suitable broaches, guide bushings, and broach pullers as necessary. This machine can be applied to surface work by providing a suitable work-holding fixture incorporating broach guides.

In these machines the hydraulic cylinder and rod is securely anchored to the bed under the pulling slide, thus conserving floor space. The combination cylinder and slide

is extra long and is guided by hardened steel ways accurately ground and located. Four wipers on the slide protect the bearing surfaces and at each stroke oil is forced onto the hardened ways.

A standard-frame motor is directly connected to the hydraulic unit by means of a flexible coupling. The pumping unit is continuously submerged in hydraulic oil and an infinite variation of cutting speed is provided by conveniently placed lever with graduated dial. The pressure is read on a fan-type gage. Movement of the slide is in the direction of the lever movement, and inching is readily possible. Adjustable stop-collars are provided for controlling the end of the stroke.

Attention has been paid to chip disposal including the design of heavy steel guards to confine the chips and coolant, and a chip chute through the front of the bed conducts chips and coolant to an interior compartment where it drains into a reservoir. This chip compartment opens on the side of the machine away from the operator, and facilitates chip-removal without interruption of the work.

## Machine Tool Orders Decline in July

THE index of machine tool orders in July declined to 171.1 from 191.1 in June, according to the monthly report of the National Machine Tool Builders' Association. A year ago the index stood at 150.1. In a breakdown of the index figure it was indicated that the lessened activity of domestic buyers, which depressed the domestic index from 137.6 in June, to 115.4 in July, has

not influenced foreign buying, which continues well sustained. The index of shipments abroad was 55.7 in July, as compared with 54.2 in June and 45.7 in July, 1936.

The recent decision of the Interstate Commerce Commission finding justified certain Kentucky intrastate rates upheld the newly established rate of \$1.25 on coal over the Louisville & Nashville Railroad from Hardburly to Wilders Yard, reduced from \$1.65. The Andrews Steel Co. has a plant at Wilders, which adjoins Newport.

# THIS WEEK ON THE ASSEMBLY LINE



*... UAW internal fight breaks into open with Martin opposing Wyndham Mortimer's faction at Milwaukee executive sessions.*

o o o

*... Another union split seen in A F of L vote on municipal political slate.*

o o o

*... Assemblies for model year's last productive month point to record of 375,000 units.*

o o o

*... Motor Wheel Corp., Lansing, sponsors big expansion program for brake drum manufacturing.*

**D**ETROIT, Aug. 16.—The distribution of union literature at Ford's plant gates last week was the prelude to the uncovering of two kinds of dynamite. The two sticks of explosive in a tunnel at the Rouge plant were reported by police to be wet and harmless, but at Milwaukee a blast has been set off that marks the opening of the UAW internal warfare. As predicted months ago, factions led by Homer Martin, president, and Wyndham Mortimer, first vice-president, are battling for supremacy on platforms that will affect every industrialist that is forced to negotiate with whoever wins the forthcoming union election. Next Monday the UAW International Union meets in convention at Milwaukee and by that time the future course of the union may have been established by the executive committee now in session. The fundamental issue has already been

defined by two of the opponents, Martin and Ed Hall, a vice-president. Martin used the term "outside organization" in an attack on those within his own organization who are opposing him, and Hall, one of the opponents, is said to have admitted in conversation that Martin's stand was one against the Communist Party.

The fight that is being waged in the Milwaukee sessions has been brought into the open through blistering statements issued in leaflet form by the two factions for distribution to all locals in the union. This open warfare was precipitated by incidents in connection with the demonstration last Wednesday at the Ford plant, when George Edwards, an organizer assigned to the West Side local, read a telegram from Walter Reuther in which Reuther explained that action of the international officers at Milwaukee was keeping him

from the demonstration. The Martin-Frankenstein faction had threatened to suspend Reuther, Hall and vice-president Wyndham Mortimer if they quit the executive sessions to be at the Ford gates. The fireworks at Milwaukee showed the line-up of the union officers distinctly. On the one side are Martin and Richard Frankenstein, Detroit organizational director, who have organized what they call the "Martin-Frankenstein Progressive Caucus for the Preservation of the UAW and the CIO," with an office in Detroit across the street from their regular UAW offices. Their opponents seem to have no formal organization but have become known as the "unity group" and consist of Mortimer, Hall and Reuther. Aside from the fact that the unity group is that favored by the opportunists and by those who are charged with being Communists or former members of the Communist party, there are other real fundamental differences between the two.

Martin's group is demanding a strong centralized government within the union, with the president empowered to enforce contract agreements through disciplining minor officers and those in the rank responsible for wildcat strikes. Mortimer's faction, on the other hand, favors more autonomy for local unions. It is likely that on this and similar issues Martin and Mortimer will oppose one another for the presidency in the forthcoming convention. On the matter of administration, Martin insists that the president or the general executive board should exercise the right to remove organizers and minor officers from their posts if they violate any union





regulation, particularly in the matter of calling strikes. In the last few months he has done so several times, removing or transferring organizers from Flint and the Saginaw Bay region and, in one case, from the Briggs local in Detroit. These actions were regarded at the time as maneuvers in opposition to the Mortimer-Hall-Reuther group and that faction now is opposed to such power being placed in the hands of the president. Both factions contend that they have enough votes pledged to elect their candidates when the 1500 ballots of delegates are counted. The unity slate, oddly enough, carries the names of Martin and Frankenstein, although they repudiate the listing.

#### Labor Paper Attacks CIO

Another phase of the battle within the ranks of the unionists is disclosed by an attack which the official organ of the Detroit and Wayne County Federation of Labor, the *Detroit Labor News*, has launched against the CIO, while still maintaining friendly relations with the UAW, affiliate of the CIO. In the *Detroit Labor News* it is charged that the CIO and the Steel Workers Organizing Committee have deserted the workers whom they led into a strike against the Newton Steel Co., owned by Republic Steel Co., at Monroe, Mich. The town's mayor has refused to give relief to the strikers who have not yet returned to work and the CIO is being attacked by the AFofL because it has not assisted its members. The *Labor News* charges that the CIO has "double-crossed labor" in Monroe by getting the workers into a morass of fear and doubt, then,

after a losing strike, "trying to sneak out and leave them."

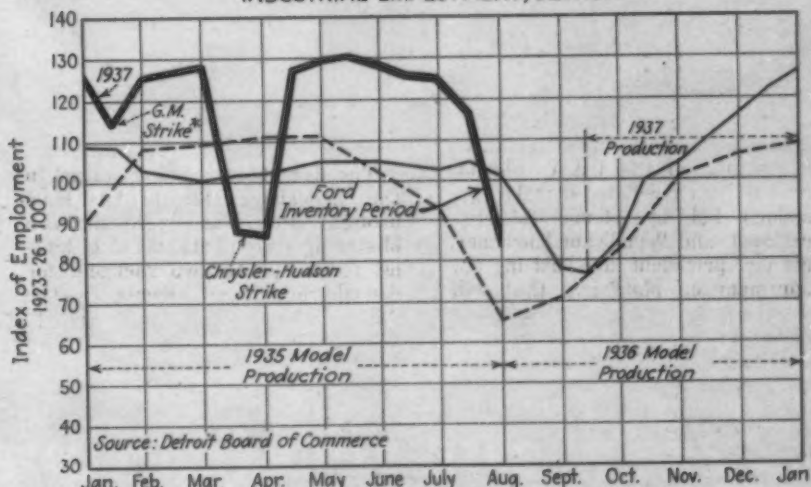
Within the AFofL group in Detroit another battle is still being waged over support of local political candidates. The AFofL, after three and one-half hours of heated debate, indorsed John W. Smith, president of the common council, for mayor in preference to Patrick H. O'Brien, former state attorney-general, who is the CIO candidate. The AFofL not only opposed O'Brien, but also the five UAW officials who are in the council race, but in doing so has created an AFofL split that will not heal easily. The vote on the mayoralty candidates was 94 for Smith and 53 for O'Brien. Frank X. Martel, federation president, admitted after the opposition refused to surrender that it might be difficult to

swing the full strength of the AFofL in Detroit to Smith. He said that in his opinion the Smith opposition came largely from "the younger socialistic element" in the federation.

These battles are of more than local importance because they will take on the nature of national political action by the unions. The Akron and Canton, Ohio, candidates backed by the CIO have just emerged victorious in Democratic primaries. CIO rubber workers in Akron and steel workers in Canton took a prominent part in the campaigns.

Some success seems to be attending the attempt of 30 independent labor unions to organize a national group to rival the CIO and AFofL. The National Coalition of Labor has announced that at a meeting

INDUSTRIAL EMPLOYMENT, DETROIT



\* Note: Most of General Motors production of parts and cars is outside of Metropolitan Detroit

# PROFITS ON SHORT RUNS *with* MULT-AU-MATIC ECONOMY



Standard Tooling—Ease of tool change-over from job to job—flexibility—all combine to make the Bullard Mult-Au-Matic a machine easily adaptable to medium quantity or larger volume production without material sacrifice in effective operating Economy and Profitable Efficiency.

Many manufacturers have discovered the Profitable Mult-Au-Matic possibilities on short runs and are using these machines to their advantage.

Today's Economic Problems require increased manufacturing Efficiency. Investigate these machines and Let us answer the Question, "On Short Run Jobs do Mult-Au-Matics pay for themselves and make a Profit to boot?"

**THE BULLARD COMPANY**  
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last week in Detroit delegates representing 70,000 independent union members in Michigan and Ohio voted to organize a planning committee to unite the independents.

#### Automobile Output Climbs

Meanwhile, unimpeded by the union demonstration at its gates, Ford Motor Co. got back into production the first of last week and Plymouth, with its labor trouble being negotiated, started rolling cars off its assembly lines. Automobile production started climbing to levels never before reached during the last productive month of any model year. Ward's Automotive Reports put production for last week at 103,250 passenger cars and trucks for the United States and Canada, compared with 55,329 units a year ago at the same time. Production for the previous week was 78,736. The industry was declared to be pointing toward an output of approximately 375,000 units during August. Previous to the change in announcement dates, August was, of course, one of the major periods of the production cycle, so this year the month cannot be expected to reach the high of 512,842 units completed in August, 1929.

#### Motor Wheel Corp. Expands

A building program calling for the expenditure of approximately \$250,000 and adding about 90,000 sq. ft. of floor space at Motor Wheel Corp., Lansing, is under way. First of the new structures, already started, is a manufacturing building for centrifuse brake drums. It will be immediately west of the Centrifugal Fusing Co. plant, the \$750,000 foundry announced in this column last week. The building will be 325 ft. long, 150 ft. wide and will provide manufacturing facilities for the brake drums to be produced by Centrifugal Fusing Co. A second building, to be occupied about Dec. 1, will be an expansion of the present hub shop. It will be 300 ft. by 160 ft. and will house final assembly operations on brakes. When the new set-up is in operation, the rings for the drums will be rolled in the first of the new buildings just mentioned, then they will be conveyed to the foundry for the centrifugal fusing operation. Following this, they will be returned to the centrifuse plant for machining, thence to the final assembly plant. A tunnel approximately 500 ft. long under the street will house the conveyor.

A new metal product added to the General Motors line recently is a two-wheel commercial and utility trailer of 1000 lb. capacity. Two body lengths, 77 in. and 91 in., are offered in four body styles. A

standard pick-up is offered with variations including side screens, top and side screens or stake racks. It is generally predicted that this is a first step for General Motors into the possible production of house trailers. Chrysler Royal production is being stepped up for 1938 from 1200 to 2000 a day.

Automotive men in this area are very much interested in stories they are hearing from Buffalo and Washington about Pierce-Arrow Motor Corp., and the possibility that Postmaster-General James A. Farley may head that company soon. The stories they have been hearing indicate that Farley has been approached by Pierce-Arrow with the idea that he should lead it in a new program that would put it in the market with a car in the

\$750-\$1,000 class. Plans to raise \$11,000,000 cash for working capital have been announced by Pierce-Arrow's president, A. J. Chanter. Stockholders are to vote on the financing plan Sept. 2.

Studebaker and General Motors are to offer Hercules diesel-powered trucks, it has been learned. The chassis, to be built by Studebaker, will take 9, 12 and 15-ft. body lengths on wheelbases of 138, 162 and 180 in. Prices range from \$2,450 to \$2,550 at the factory. The engine is a six-cylinder type, with 260 cu. in. displacement. A shipment of 100 heavy duty, six-cylinder Hercules diesels has been made to the General Motors export assembly plant at Weehawken, N. J., for installation in Chevrolet truck chassis for foreign markets.



**A**CID etching of auto parts to discover possible defects has been supplemented at Cadillac-LaSalle by a process that employs fundamental laws of magnetism. The part under examination (in this case a camshaft) is first magnetized by an electric current. Then it is dipped in a turbulent solution where iron filings are kept in constant suspension by escaping air pressure. When the part is withdrawn, the filings are found to have massed around the flaws. This attraction of the small filings occurs because north-south poles have been established across breaks in the consistency of the material. This test requires only a few minutes. The etching process, where acid attacks and emphasizes the weaknesses, requires much longer and leaves the part pitted and unfit for further use or further tests.



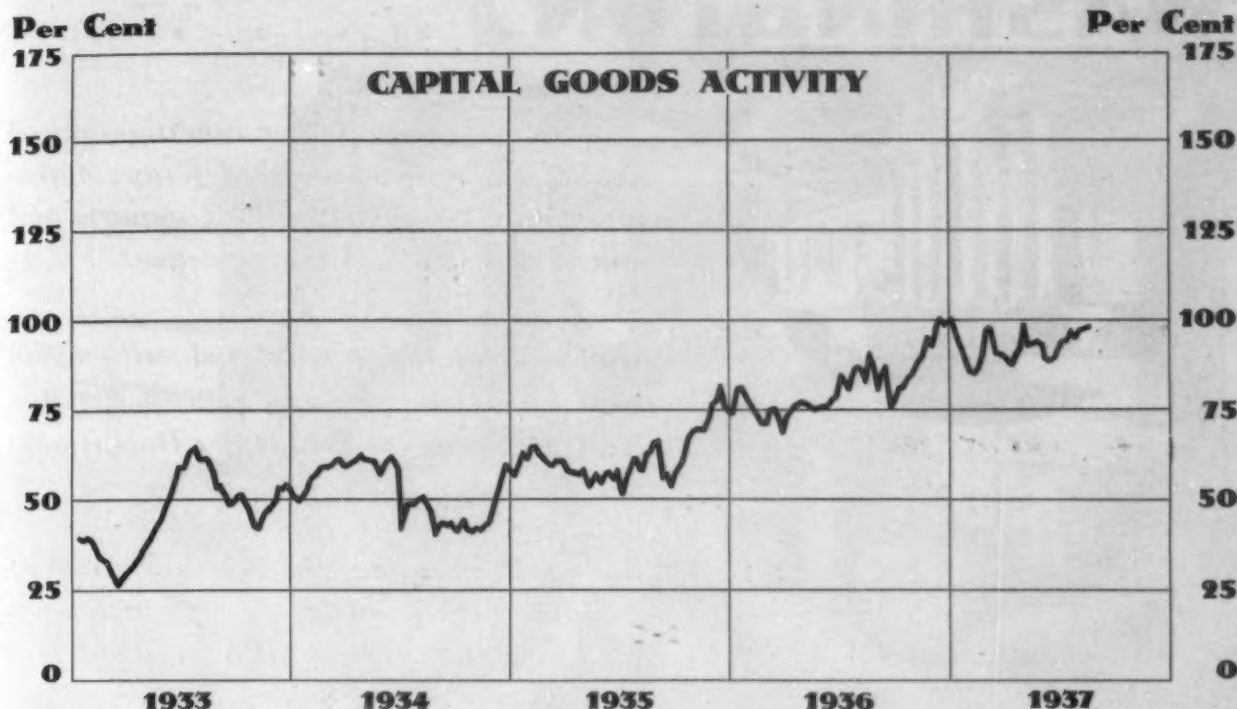
# Current Metal Working Activity Statistically Shown

These Data Are Assembled by The Iron Age from Recognized Sources and Are Changed Regularly as More Recent Figures Are Made Available. Boldface Type Indicates Changes This Week

	June 1937	May 1937	June 1936	Six Months 1936	Six Months 1937
<b>Raw Materials:</b>					
Lake ore consumption (gross tons) <sup>a</sup> .....	4,639,733	\$5,339,925	3,763,289	19,612,326	29,373,959
Coke production (net tons) <sup>b</sup> .....	.....	4,798,511	3,787,711	21,295,300	.....
<b>Pig iron:</b>					
Pig iron output—monthly (gross tons) <sup>c</sup> .....	3,107,506	3,537,231	2,586,240	13,528,226	19,706,593
Pig iron output—daily (gross tons) <sup>c</sup> .....	103,584	114,104	86,208	74,331	108,876
<b>Castings:</b>					
Malleable castings—production (net tons) <sup>d</sup> ..	54,026	55,960	43,766	274,092	351,855
Malleable castings—orders (net tons) <sup>d</sup> .....	43,141	\$46,018	42,848	265,055	334,858
Steel castings—production (net tons) <sup>d</sup> .....	<b>101,239</b>	95,995	70,323	341,582	<b>596,561</b>
Steel castings—orders (net tons) <sup>d</sup> .....	<b>71,817</b>	68,688	94,345	423,544	<b>608,908</b>
<b>Steel Ingots:</b>					
Steel ingot production—monthly (gross tons) <sup>e</sup>	4,183,762	5,135,559	3,984,845	21,326,335	28,764,633
Steel ingot production—weekly average (gross tons) <sup>e</sup> .....	875,236	1,163,332	926,706	817,997	1,111,891
Steel ingot production—per cent of capacity <sup>f</sup> ..	74.46	88.82	70.75	62.45	84.89
<b>Finished steel:</b>					
Trackwork shipments (net tons) <sup>g</sup> .....	9,194	8,807	6,507	34,592	54,008
Fabricated shape orders (net tons) <sup>h</sup> .....	169,792	\$121,481	\$132,387	\$761,976	909,313
Fabricated shape shipments (net tons) <sup>h</sup> .....	140,125	\$137,683	\$154,470	\$692,244	769,560
Fabricated plate orders (net tons) <sup>d</sup> .....	34,833	28,913	52,937	231,407	251,245
U. S. Steel Corp. shipments (tons) <sup>h</sup> .....	1,268,550	1,304,039	886,065	5,031,350	7,614,274
Ohio River steel shipments (net tons) <sup>i</sup> .....	147,100	102,200	109,455	465,621	657,690
<b>Fabricated Products:</b>					
Automobile production, U. S. and Canada <sup>k</sup> ..	521,139	540,357	470,887	2,596,356	2,917,420
Construction contracts, 37 Eastern States <sup>l</sup> ...	\$318,137,100	\$244,112,800	\$233,054,600	\$1,237,731,000	\$1,494,514,300
Steel barrel shipments (number) <sup>d</sup> .....	929,536	786,607	708,069	3,902,716	5,326,327
Steel furniture shipments (dollars) <sup>d</sup> .....	<b>2,183,481</b>	2,302,350	1,470,195	9,211,418	13,710,186
Steel boiler orders (sq. ft.) <sup>d</sup> .....	<b>719,008</b>	1,005,591	1,130,886	\$4,650,605	5,453,309
Locomotive orders (number) <sup>m</sup> .....	22	14	24	122	228
Freight car orders (number) <sup>m</sup> .....	528	3,903	4,320	26,554	45,090
Machine tool index <sup>n</sup> .....	191.8	208.5	128.8	\$124.5	\$227.6
Foundry equipment index <sup>o</sup> .....	228.2	237.6	141.4	\$146.9	\$226.1
<b>Foreign Trade:</b>					
Total iron and steel imports (gross tons) <sup>p</sup> ...	44,771	49,050	59,910	319,145	298,514
Imports of pig iron (gross tons) <sup>p</sup> .....	7,541	6,361	16,793	97,507	59,865
Imports of all rolled steel (gross tons) <sup>p</sup> .....	24,656	29,031	15,715	123,768	171,929
Total iron and steel exports (gross tons) <sup>p</sup> ...	826,534	969,222	294,951	1,626,665	3,542,693
Exports of all rolled steel (gross tons) <sup>p</sup> .....	195,676	279,699	100,303	533,501	1,022,123
Exports of finished steel (gross tons) <sup>p</sup> .....	163,689	164,192	89,287	487,325	895,105
Exports of scrap (gross tons) <sup>p</sup> .....	514,651	630,671	186,756	1,045,426	2,134,765
<b>British production:</b>					
British pig iron production (gross tons) <sup>r</sup> .....	699,300	696,300	644,100	3,749,100	4,011,000
British steel ingot production (gross tons) <sup>r</sup> ...	1,106,400	1,047,300	965,900	5,744,200	6,338,400
<b>Non-ferrous Metals:</b>					
Lead production (net tons) <sup>s</sup> .....	40,156	\$42,605	38,818	224,015	254,134
Lead shipments (net tons) <sup>s</sup> .....	42,710	55,212	37,736	215,737	312,640
Zinc production (net tons) <sup>t</sup> .....	50,526	55,012	44,947	253,732	280,590
Zinc shipments (net tons) <sup>t</sup> .....	50,219	55,201	41,654	252,487	319,464
Deliveries of tin (gross tons) <sup>v</sup> .....	6,645	6,425	7,795	37,020	44,435
Copper production, refined (net tons) <sup>w</sup> .....	86,016	95,265	60,562	356,180	487,465

\* Preliminary. † Three months' average. ‡ Revised.  
Source of figures: <sup>a</sup> Lake Superior Iron Ore Association; <sup>b</sup> Bureau of Mines; <sup>c</sup> THE IRON AGE; <sup>d</sup> Bureau of the Census; <sup>e</sup> American Iron and Steel Institute; <sup>f</sup> National Association of Flat-Rolled Steel Manufacturers; <sup>g</sup> American Institute of Steel Construction; <sup>h</sup> United States Steel Corp.; <sup>i</sup> United States Engineer, Pittsburgh; <sup>j</sup> When preliminary from Automobile Manufacturers Association—Final figures from Bureau of Census; <sup>k</sup> E. W. Dodge Corp.; <sup>l</sup> Railway Age; <sup>m</sup> National Machine Tool Builders Association; <sup>n</sup> Foundry Equipment Manufacturers Association; <sup>o</sup> Department of Commerce; <sup>p</sup> British Iron and Steel Federation; <sup>q</sup> American Bureau of Metal Statistics; <sup>r</sup> American Zinc Institute, Inc.; <sup>s</sup> New York Commodities Exchange; <sup>t</sup> Copper Institute.





The Iron Age Weekly Index of Capital Goods Activity  
(1925-27 = 100)

Last week .....	106.0	Same week 1933 .....	61.6
Preceding week .....	97.0*	Same week 1932 .....	33.7
Same week last month .....	97.7	Same week 1931 .....	58.1
Same week 1936 .....	82.2	Same week 1930 .....	85.5
Same week 1935 .....	62.4	Same week 1929 .....	120.4
Same week 1934 .....	48.7		

\* Revised.

**A**CTIVITY in the production and distribution of durable goods showed a gain of nine points for the week ended Aug. 14 over the figure for the preceding week, according to THE IRON AGE seasonally adjusted index. The gain can be attributed entirely to the resumption of production by the Ford Motor Co. after a three-week shutdown for inventory purposes. The addition of the Ford output increased automotive production 31 per cent, against the seasonal trend. All other factors were down, including heavy engineering construction when computed on the basis of the 13-week moving average used in the index, although the latest weekly figure shows a small gain. The composite index has

been revised (from 97.2) for the preceding week as a result of a revised estimate by Ward's Automotive Reports for automobile production for the week ended Aug. 7.

	Latest Week	Change from Preceding Week
Steel production (per cent of capacity) .....	84.5	-0.5
Automobile production (number of cars and trucks) .....	103,250	+24,514
Railroad loadings of forest products (number of cars) ..	41,144	-1,626
Pittsburgh industrial production and shipments (index number)	105.1	-1.4
Construction contracts awarded (total value) .....	\$45,348,000	+\$1,307,000

Components of The Index (1) Steel Ingot Production Rate, from THE IRON AGE; (2) Automobile Production, from Ward's Automotive Reports; (3) Revenue Freight Carloadings of Forest Products, from Association of American Railroads; (4) Industrial Productive Activity in Pittsburgh District, from Bureau of Business Research of University of Pittsburgh; (5) Heavy Construction Contract Awards, from Engineering News-Record.

# WASHINGTON . . . . .



By L. W. MOFFETT

Resident Washington Editor  
The Iron Age

... Senator Nye to press for investigation of profits made on exports of scrap; agreement may be made to limit exports and conserve scrap for domestic use.

... Mail interference during steel strike again stirs up debate in Senate, with Senator Bridges flaying the Post Office Department and Farley.

... Railroad to expand research work; cost of sit-down strikes partly revealed in reports filed with SEC; comments on appointment of Supreme Court Justice.

WASHINGTON, Aug. 17.—Senator Gerald P. Nye, Republican of North Dakota, told THE IRON AGE that he will press his request for an investigation of the financial structure of scrap dealers, the extent to which they have profited as the result of high scrap prices, increased exports and whether there have been any cases of tax evasion. He said that he has asked a subcommittee of the Senate Committee on Military Affairs to make a study of profits of scrap exporters.

The Senator said that there is no chance for legislation on the subject at the present session of Congress but that it will be urged at the next session. Last Tuesday in the Senate he proposed an investigation, but no action was taken. Nye said that one Philadelphia scrap concern took in \$32-

000,000 last year, and through subsidiary companies made 150 per cent of its capital stock. He urged the Military Affairs Committee to act favorably on the export scrap embargo bill, declaring that the price of scrap steel had increased \$6 per ton in the past few months, and that "if the scale continues, the cost to American consumers of scrap steel will amount to \$120,000,000 annually." Apparently the Senator meant an added cost rather than a total cost of the sum mentioned.

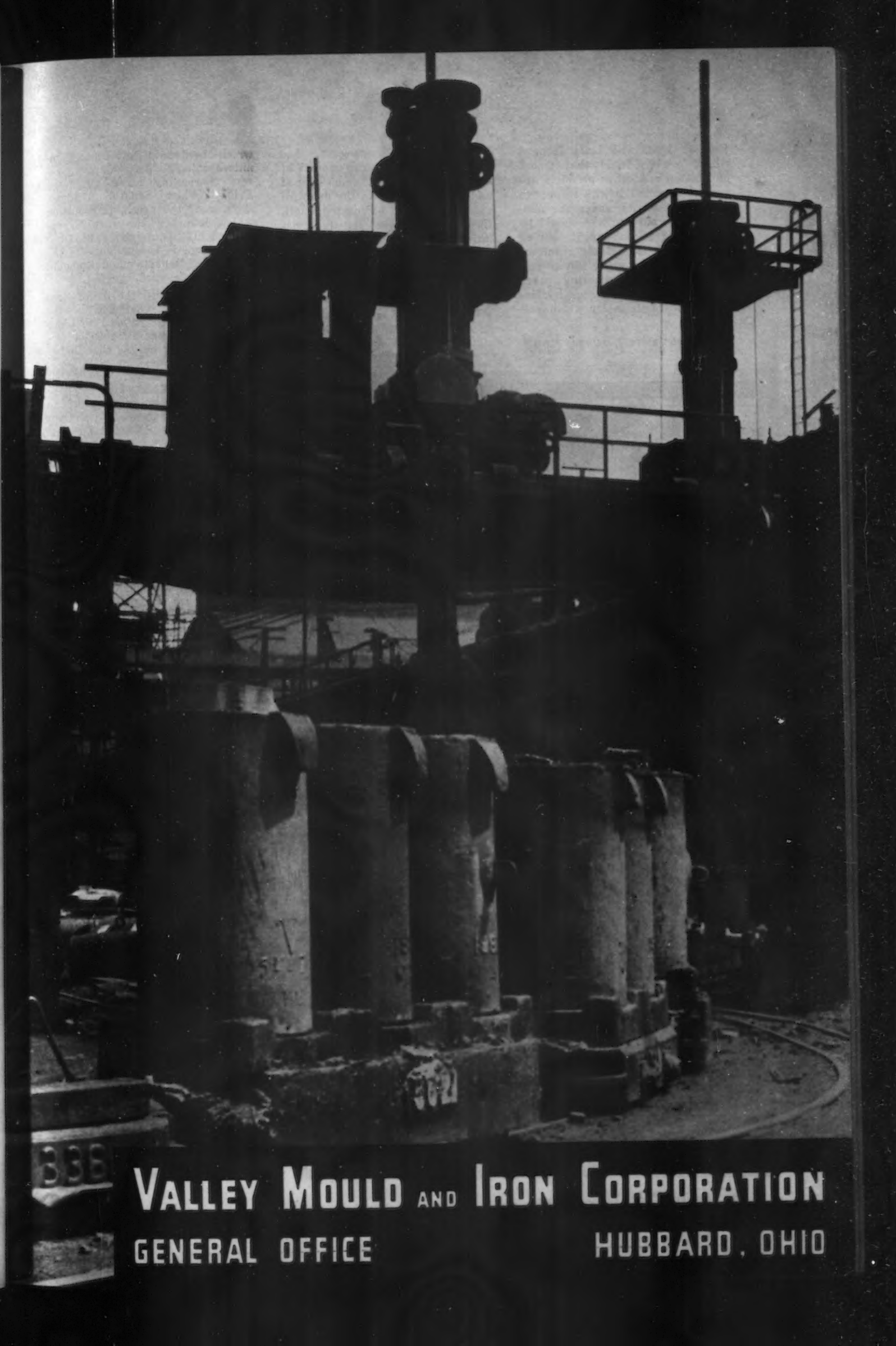
Even some who are favorable to a scrap embargo legislation, hearings on which have been postponed until Congress reconvenes in January, say that the Senator's estimates of profits of scrap exporters are too high, and that this fact will be brought out if the investigation actually is made.

The Senator said he would ask for the investigation even if melters and scrap dealers negotiate a plan to take care of domestic scrap requirements satisfactorily and thus avoid efforts to pass embargo legislation. At the Capitol it was said such a plan is being considered. It was stated that the plan contemplates that all impor-

tant scrap exporters who are not already members would become affiliated with the recently formed Scrap Export Associates of America, set up under the Webb-Pomerene law with the approval of the Federal Trade Commission. Present members of the export association are the Charles Dreifus Co., Robert Joseph and Schiavone-Bonomo Corp. It was stated that under the plan there would be no exports of No. 1 heavy melting steel and that members of the association would give preference to domestic consumers for all other requirements, exporting surplus tonnage only.

Senator Nye said that inasmuch as scrap prices are such an important item in steel costs the plan should have an effect on steel prices, but still insisted that he favored an export licensing bill. He said he was unalterably opposed to any kind of scrap exportation because the material is used for foreign armament purposes and also because the United States should conserve its raw materials. Asked if he did not think that by similar logic as it applied to war purposes, wheat and cotton should not also be included along with other products in such legislation,





**VALLEY MOULD AND IRON CORPORATION**  
GENERAL OFFICE HUBBARD, OHIO

Senator Nye, who hails from a wheat country, said that wheat and cotton and other products are subject to embargo with respect to warring countries under the neutrality act, but are and should be open to free movement during peace times. He did not grant inconsistency in urging scrap embargo legislation covering peace times while opposing such legislation in peace times for wheat and cotton.

Representative Kopplemann,

Democrat of Connecticut, has pending a bill to license exports of iron ore, pig iron, semi-finished and finished steel. In the doubtful event that it will be enacted at all, there is no prospect for the legislation at the present session now apparently near an end.

#### Mail Interference Again Stirs Up Senate Debate

**C**HARGES of mail interference by CIO pickets in the Ohio strike area last June—a subject

which the Senate Post Office Committee voted to drop weeks ago—was thoroughly aired again on Friday when Senator Bridges, sponsor of the original resolution which launched the inquiry, reminded his Senate colleagues that the incident is “a challenge to the Post Office Department and should not go unanswered.”

Bridges aroused the ire of Senator McKellar, chairman of the committee which refused to place any blame on the Post Office Department, and before the discussion ended, Senators Schwollenbach, Minton, Clark, Austin, Ellender and McKellar took the floor and the controversy rang up to the tune of 14 pages in the Congressional Record issued on Saturday.

The New Hampshire Senator quoted repeatedly from the transcript of hearings covering the investigation and McKellar was successful in having inserted in the record excerpts including reports from postal inspectors in the Ohio area.

“A tradition has been dynamited—a tradition which has been built up that the mails must go through,” declared Bridges.

“When Postmaster General Farley upheld the tradition that ‘the mails must go through,’ he sent young Army flyers over snow-capped mountains in planes ill-equipped to carry through. The fact that these young men faced death did not stop the Postmaster General at that time from declaring that the mails must go through.”

Bridges chided the department for its failure to take similar action during the Ohio strike period in order to assure food deliveries, and McKellar was on his toes defending the department to the limit.

In 1936, Bridges recalled, the Goodyear Tire & Rubber Co. had no trouble in enlisting the services of the Post Office Department in delivering almost a ton of food a day during a strike. He submitted an affidavit in substantiation of his statement.

“Then came the election,” Bridges continued, “at which time John L. Lewis’ CIO affiliates contributed approximately half a million dollars to the political forces of the Administration. . . . Now in 1937 the same type of mail which passed freely in 1936 is classed as ‘irregular.’”

McKellar characterized Bridges as “angry because the Government did not take sides” in the Republic strike controversy and told the Senate that further consideration

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He has the large “family” of Wyandotte metal cleaners from which the selection can be made, quickly and conveniently, which will meet his peculiar needs. Each member of the “family” is specialized—for certain definite purposes.

Chemically clean surfaces—fewer rejects—shorter cleaning time—low cost of cleaning—these are performances you have the right to expect from a Wyandotte Metal Cleaner. A large number of well pleased patrons are getting them.

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of the Bridges resolution and further inquiry would have put the Government directly in the position of taking sides.

#### Railroads to Expand Research Work

**M**ETALLURGICAL and physical problems will be among those to be studied by the Division of Engineering Research which has been established by the Association of American Railroads. Widespread research work into the adaptability and use of lighter metals will come within the scope of the division, which will expand and coordinate research work now being carried on by the railroads of the country insofar as it affects the physical properties. Cars, locomotives, track structures, buildings, electrical, shop and maintenance of way equipment together with the necessary materials and supplies, all will come under the jurisdiction of the division, according to President J. J. Pelley of the association.

This new division will absorb the work now being performed by the Division of Equipment Research, which was organized several years ago. L. W. Wallace, who has been head of the Equipment Research Division, has been appointed director of the Division of Engineering Research. G. M. Magee, assistant engineer of the Kansas City Southern, has been appointed assistant director. Headquarters of the division will be at 59 East Van Buren Street, Chicago.

An agreeable hot weather item is the statement that the railroads are pushing their air-conditioning program. Mr. Pelley has announced that the Class I railroads and the Pullman Co. on June 30 had 9311 air-conditioned passenger cars in operation, 4751 and 4560 respectively. During the past year the railroads and the Pullman Co. installed air-conditioning devices on approximately 1700 passenger cars.

Further evidence that the railroads are modernizing their plant is reflected in the association's statement that 26 multiple unit streamlined passenger trains are now in operation on railroads in the United States, and orders have been placed for the construction of nine additional ones.

#### Cost of Sit-Down Strikes

**A**N item in the high cost to industry of John L. Lewis' sit-downers that has been overlooked relates to expenditures for plant protection. The total cost of such protection during the period of the sit-down mania is not known, but no doubt ran into a large figure. The General Motors Corp., first

American victim of the sit-downers, paid out \$196,333.52 for plant protection in 1936, as shown by its report filed with the Securities and Exchange Commission. This was an increase of approximately \$29,000 over the \$167,586 paid for plant protection in 1935. Since the sit-down strike began Dec. 21, 1936, the increased plant protection cost covered only 10 days of last year, or about \$2,900 a day. The G-M sit-down strike was "officially" ended March 21, 1937, so that the heavier costs for plant

protection evidently will be reflected in the 1937 report. The 1936 G-M report showed Pinkerton's National Agency was paid \$140,863.79; the Corporation Auxiliary Co., \$33,044.76; and Railway Audit & Inspection Co., \$22,424.97. The 1935 payment was made to only one company, the Pinkerton Agency.

**P**RESIDENT ROOSEVELT'S naming of Senator Hugo L. Black of Alabama, ardent New Dealer, as an Associate Justice of



● It is not unusual to hear our customers say that Cold Rolled Precision Strip Steel gives them a larger number of parts per hundred pounds of metal.

The explanation is not difficult to find. This steel is true to gauge across the complete width of the strip. Uniform gauge means maximum square feet of surface per hundred pounds and obviously maximum units of production.

Cold Rolled Precision Strip Steel is also true to specified temper, with straight, smooth edges and a bright finish, free from imperfections. Furnished in sizes as light as .001" in any analysis and temper you require.

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Youngstown, Ohio



the United States Supreme Court, has been referred to as a "great surprise," "startling," etc. It was not. The point long ago was passed when a White House move was surprising or startling. The President revels in doing the unusual thing.

The selection of Senator Black, even a surprise to the President's own ready-to-be-surprised staff, did create a furor, and no group was more nonplussed than his colleagues in the Senate, or many of them at least. For it seems to be true that the President had surrounded the name of the Associate Justice nominee with such secrecy that not even his leaders in the Senate knew it was hidden in the New Deal deck. Even the

President is said to have been undecided on the name two hours before it was thrust before the Senate. This may be doubted, however, inasmuch as the President said he had asked Attorney-General Cummings in advance as to whether Senator Black was eligible for appointment in view of the Senator's voting for the Supreme Court Justice retirement bill, and was assured the selection was legal, a questionable decision with some Senators. The bill now is a law. It increases the emoluments of Supreme Court office. Perhaps the Attorney-General had the answer at the end of his tongue and did not require any time, much less two hours, to ponder the hoped-for "informal and verbal" reply.

In any event, wrangling over the question as to the eligibility of the Senator to sit on the Supreme Court because he voted for the retirement bill was made the occasion for delaying his immediate confirmation. This was unusual. Ordinarily, the clubby Senate gives immediate confirmation to the nomination of one of its own. A few Senators, however, not confined to Republicans, opposed Black's appointment on the ground that he is not qualified either by experience or temperament for the office.

This view did not find open expression, thanks to "Senatorial Courtesy." Rather, expressed opposition was based on legal grounds. One contention was made that the retirement act did not create a vacancy.

#### Has Supported the New Deal

But for the President's purpose the Senator is perfectly qualified. Consistently, invariably, and regardless of their merit or lack of merit, Senator Black has voted for all New Deal measures. Hence, if as a member of the Supreme Court his mind goes along with that of the President as regularly as it has as Senator, the President may be assured that there will be no unanimous decisions against any of his regimentation doctrines that are tossed into the scales before the country's highest bar of justice for constitutional weighing. On only three occasions has Senator Black broken his allegiance with the President. Running contrary to the President's position, Senator Black supported the bonus in 1934; opposed 3.2 per cent beer, and voted to override the Presidential veto on continuing the low rate on farm loans.

The 51-year-old Senator, the youngest Supreme Court appointee since 1910, when his predecessor, former Justice Willis Van Devanter was appointed at 51, hails from the heart of the Southern iron and steel industry, Birmingham. But he has been far from being an industrial-minded statesman. Known to be a fighting "liberal," Senator Black has espoused economic views that have even out-New Dealed the New Deal. He enthusiastically sponsored the 30-hr. bill, which he forced through the Senate. It was so radical that the Administration, as a means of shunting it off the legislative boards, rushed in the NRA to take its place. Strangely enough, Senator Black, in a sort of tit-for-tat gesture, forced toning down of the Cohen-Corcoran written Administration wage-hour bill. Which may mean the Senator had altered his economic views. Or that he was

(Photo courtesy Swansea Print Works. Illustration shows upper half oil-proof casing removed.)



## More KILOWATTS with ROLLER CHAIN

The Baldwin-Duckworth Chain drive shown here hooks a steam engine with a generator and gives a speed *increase* of 7.05 to 1. This is an unusual drive problem, but typical of the many successful ways in which roller chain may be used.

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concerned over hostile Southern reaction to the embattled bill. No doubt this reaction was a source of concern to the Senator, who, had he not been named for the Supreme Court berth, would have had to face Alabama voters for reelection.

Those who say—and there are many—that the Senator is far from being qualified to wear the robes of a Supreme Court Justice, insist he still has the stature of a police court prosecutor and per-

secutor, and scornful of the constitution. They point to his record in the Senate, and insist that if his philosophy as exhibited in that forum is to be maintained the President has made headway toward packing the Supreme Court, despite crushing defeat of the Court packing bill.

The Senator in his natural role of a persecutor of "economic Royalists," Tories, and so forth, was at his best as chairman of the Senate Committee investigating lobby-

ing. Public utility interests were flayed alive with great relish by the Senator, basking joyously in the national limelight. Blanket subpoenas to force telegraph companies to submit copies of private and public messages were freely used by the Senator as he rode roughshod over the Constitution. Intemperately, he attacked witness after witness, unwilling to let them express their side of the case. In the air-mail contract investigation, wherein testimony damaging to the Administration was given by such prominent witnesses as Col. Charles A. Lindbergh, Black saw to it that Farley was whitewashed for his bungling job. The Senator is criticized as having shown then, as he has shown since he entered public life, that by training, background and temperament he has in a marked degree qualities which are the opposite of those needed for the Supreme Court bench. Indorsement by John L. Lewis, William Green and Jim Farley does not qualify him. Nor would indorsement by any single groups. He will be called upon to mete out justice fairly to all groups. But unless the responsibility put upon him and association with a highly intellectual judicial circle heightens his stature, Mr. Black as a Supreme Court Justice will be a deep disappointment to the country but a happy appointment for the New Deal.

Indeed, it is the view in some political groups that the President's nomination of Senator Black was notification of breaking away from the old-liners, possibly as a move toward setting up a new party. It was, of course, a rebuke to those of his party who turned thumbs down on the court reorganization bill, though some of the down-thumbers approved Black's nomination.

## Elections To Decide Between AFL and CIO

WASHINGTON, Aug. 17.—Coming again to grips over disputes between AFofL unions and the United Automobile Workers' Union, a CIO affiliate, the National Labor Relations Board last Thursday ordered elections in the plants of the Globe Machine & Stamping Co., Cleveland, and the City Auto Stamping Co., Toledo, to determine the question of the appropriate bargaining units. The elections will be held within 15 days of the date of the order.

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# CINCINNATI BICKFORD



## Steel Companies Seek Exemption From Bituminous Coal Code

**W**ASHINGTON, Aug. 17.—The National Bituminous Coal Commission is being confronted with numerous applications from captive mines seeking exemption from the bituminous coal code.

As a result, the commission has scheduled a number of hearings for the announced purpose of securing "full evidence of the facts and corporate relationships under the law in all cases."

The commission announced in June its intention of including captive mines under the act and pointed out that such mines would be subject to the code's marketing and price-fixing provisions in cases where a subsidiary mining company was set up as a "separate corporate entity." This ruling was made despite the provision which specifically provides that the marketing section "shall not apply to coal consumed by the producer or to coal transported by the producer to himself for consumption by him."

The commission ruled, however, that actual transfer of title under such circumstances takes place and that, therefore, the coal is to be covered by the code. Officials now term that ruling a "horseback" opinion and say that actual transfer of title does not necessarily indicate the commission will move to include the captives.

This about-face attitude may be due to the many applications or it is believed in some quarters that the commission would prefer not to cover captives in view of their lower operating costs which would pull the general price level down in determining weighted average costs, the basis for fixing the minimum prices under the act.

There is little doubt, many believe, that the coal board would prefer to exercise jurisdiction over the captive mines were it not for the necessity of including these costs. Some of the officials have been represented as feeling that the purchase of coal from subsidiary companies has a "distinct effect" on the general price level and for that reason the captives should be held under rein at least until the matter is threshed over fully.

Hearings scheduled for steel captive mines include:

Aug. 16—Pittsburgh Steel Co., which has asked exemption for its

Monessen and Alicia mines, and for its Thompson mines 1 and 2 and Tower Hill Mine 2.

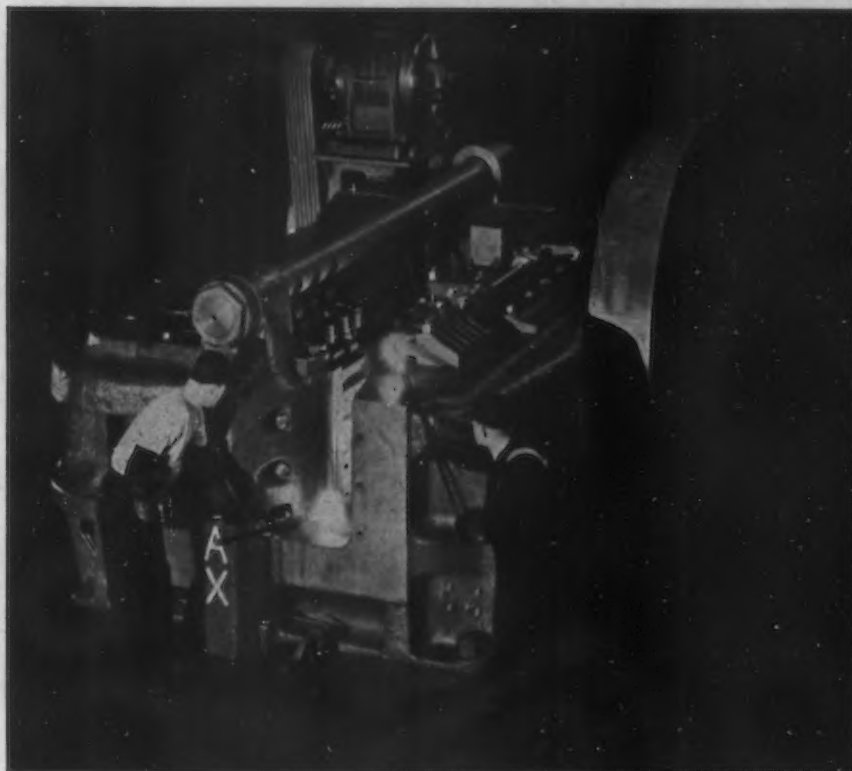
Aug. 17—Wheeling Steel Corp., for Consuming Mining Co. of Har-marville, Pa., and the Emperor Coal Co., of Wheeling, W. Va.

Aug. 25—Columbia Steel Co., of San Francisco, with mines in Utah.

Aug. 26—Tennessee Coal, Iron & Railroad Co., with mines in Alabama.

A score of other hearings have been scheduled for captive mines outside the steel industry.

The captive mine hearings got off to a bad start last week when the Carnegie-Illinois session was postponed until Aug. 31. James W. Hamilton, secretary, of New York



## USERS REPORT GAINS OF 25%

● Because of the instant response of the air clutch, the new Ajax Forging Machines are more productive than any previously developed. Substantial production increases, as much as 25%, are reported to us by users.

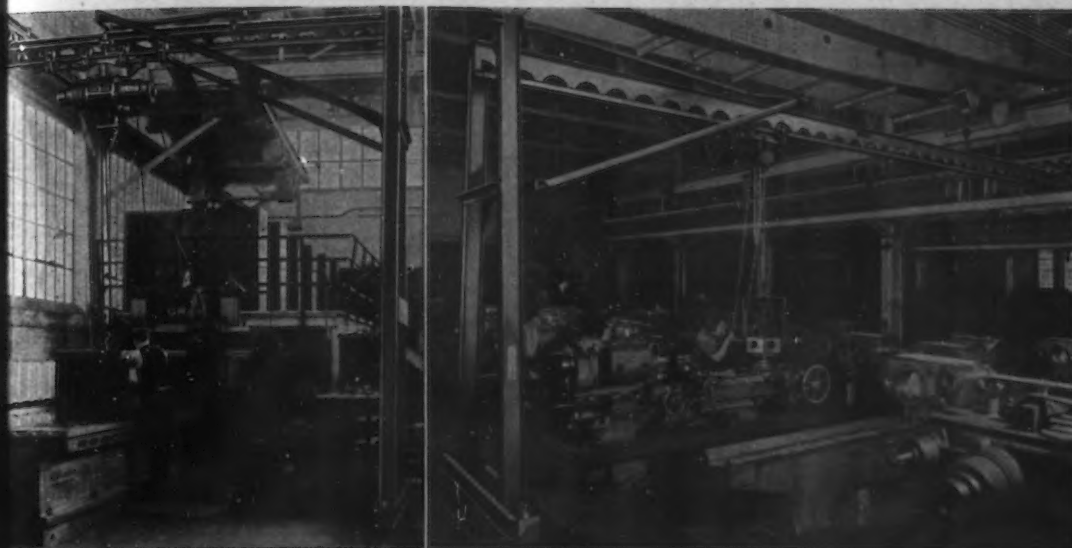
On these new Ajax machines output is limited principally by the amount of stock the operator can feed during his work shift. Effortless tripping and convenient feed-gap design enable him to stand with weight on both feet in a natural, well balanced position. And the instantaneous action of the clutch materially lessens the time he must support the bar between the dies.

These fatigue-lessening improvements which result in profit-paying gains in output merit your immediate investigation.

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And again "two big" boys cannot work in the same place—but one and a helper can because the Tramrail Gantry works right under the overhead crane and actually becomes a helper.

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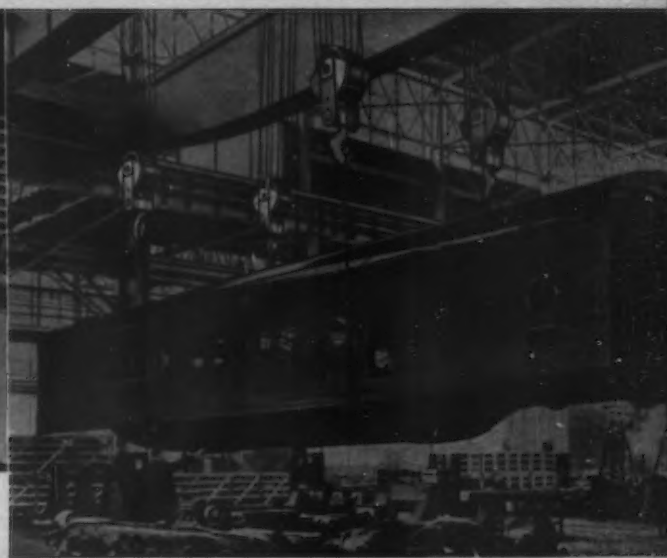
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## PRODUCT

like character  
in individuals

## MUST BE

## BUILT



● To handle the "heavy loads" cranes must be built right. To give efficient service which includes low operating cost, minimum maintenance and long life cranes to handle the "light and medium loads" must also be built right. From the cutting of the rolled steel, the shaping of the hook, the scoring of the drums, to the test floor assembly, and to erection in the buyer's (your) plant Cleveland Cranes HAVE Character built into them. Records of repeat orders indicate this must be true.

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City, and W. A. Brown, of Pittsburgh, counsel for Carnegie-Illinois, appeared before the commission at short sessions on Tuesday and Wednesday. They submitted lists of the corporation's wholly owned subsidiaries and those subsidiaries which consume the production of its Johnstown and Martins Ferry mines. The session was later recessed to give the company additional time, according to the commission's announcement, "to supply the detailed information demanded by the commission."

Representatives of the Vesta and Shannopin Coal companies, both subsidiaries of Jones & Laughlin Steel Corp., were in Washington on Wednesday also asking exemption from the coal code. M. C. Angloch, president; M. E. Fry, auditor, and W. L. Copeland, counsel, told the commission the entire production of both mines is used exclusively by the parent company and that shipment of the coal is exclusively an intra-state business within the state of Pennsylvania.

Although commission spokesmen are reluctant to answer questions, should exemption be given the captives, such mines would be free from contributing to the upkeep of district administrative boards and, it is believed, would not be required to submit cost figures called for by the marketing and price-fixing provisions. On the other hand, they still would be subject to the taxing provisions of the act unless the Internal Revenue Bureau ruled otherwise, which is highly unlikely.



The action of a Morse Chain is different because its principle of design is different. There is nothing to slip. Teeth, not tension, turn a Morse Chain drive. Every ounce of power is applied smoothly, steadily, effectively, profitably.

In this day of rising production costs and narrowing profit margins, Morse Positive Drives offer alert, profit-minded manufacturers many definite advantages. Let a trained sales-engineer tell you more about Morse Positive Drives and how they can help you. Call your local Morse man or write us at Ithaca.

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## Navy Awards Four Destroyers

WASHINGTON, Aug. 17.—The Navy Department last week announced awards of two destroyers each to the Bethlehem Shipbuilding Corp. and the Bath Iron Works at an average cost of \$4,953,000.

## Canada Bans Exports of Arms, Munitions

AT the last session of the Canadian Parliament, the Customs Act was amended to provide authority for the regulation and licensing of traffic in arms and munitions of war, according to a report received in the Bureau of Foreign and Domestic Commerce from Assistant Commercial Attache Oliver B. North, Ottawa.

This amendment also contains a provision which authorizes the prohibition of arms and munition export when such action is felt warranted, the report states.

Based on this amendment, an order in council was issued under date of July 30 stating that no person shall export any of the articles listed as arms and munitions including rifles, guns, tanks, aircraft, poison gases and high explosives without first having obtained a permit from the Minister of National Revenue.

Under the same authority and under the same date another Order in council was issued prohibiting the exportation either directly or indirectly of any arms and munitions from Canada to Spain, including the territories of the Peninsula, the Balearic Islands, the Canary Islands, and towns and territories under Spanish sovereignty in Africa, according to the report.

vanced for the second time this year by 2½ per cent on Aug. 1, Luxembourgian wages by 10 per cent on July 15. Wages are also up in Czechoslovakia, where iron prices were also advanced on Aug. 1.

## Britain Buying Iron Ore From Brazil

**L**ONDON (*Special Correspondence*).—Arrangements have just been completed by the British Iron & Steel Corp. which will ensure an adequate supply of iron ore for the requirements of the British industry for some time.

It has been found possible to make up deficiencies in a number of directions. The corporation, which is the trading subsidiary of the British Iron and Steel Federation, has allowed in its calculations for the contingency of a short supply from Spain, while at the same time it is expected that more ore will be forthcoming from that quarter.

The corporation has recently contracted for the purchase of over 400,000 tons of ore of very high quality from Brazil. The ore will be shipped from Rio de Janeiro over 1938 and 1939, about one-half this quantity being taken firm and the remainder subject to option. The ore is of the basic type with a minimum of 65 per cent iron content. Deliveries have already been allotted between a number of British manufacturers.

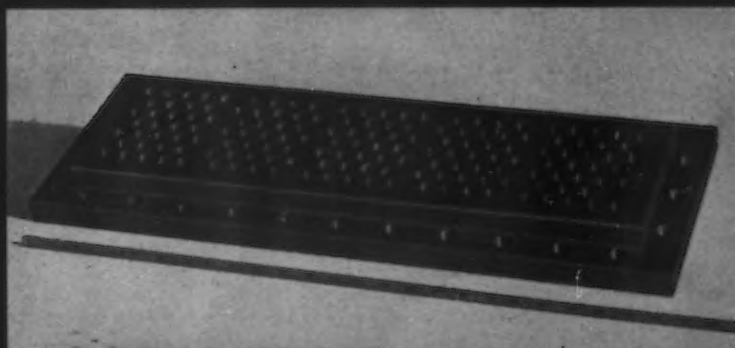
The corporation, although empowered to buy steel and scrap, has no equivalent power to purchase ore in bulk and no such extension of its activities is at present contemplated. The Brazilian contract is an exceptional undertaking for reasons of convenience. Actually the purchase is part of the corporation's policy to insure the supply of raw materials for a considerable time ahead.

Rumors in the trade of a proposal that Sweden is to increase shipments to Britain from 1,000,000 tons to 3,000,000 tons a year, and correspondingly reduce exports to Germany from 8,500,000 tons to 6,500,000 tons, must be treated with reserve, as they still lack confirmation. It has to be remembered that such action would require legislation by the Swedish Government, which has given no indication of its intention. There is a quota system in force and Germany has a number of contracts in operation. Moreover, a diversion of such large amounts of ore

might raise political considerations which, under existing conditions, it is desired to avoid.

However, the fact that Britain is fairly confident of her future supplies may be gaged from her attitude to the Australian ore deposits. It has just been disclosed in the Australian House of Representatives that before the Federal Ministry made its decision not to intervene in the exploitation of the vast Yampi Sound (Western Australia) iron ore deposits for the benefit of Japanese importers, it inquired

from the British Government whether Britain desired access to the ore. The British Government informed the Commonwealth Government, that, since the world's iron deposits were so extensive and since there were larger and richer deposits much closer to Europe, there could be no question of official assistance from the United Kingdom in the development of Yampi. Moreover, although not at present required, the deposits would be of more use in an emergency if they were under development.



## "Houdizing" Instead of Rivets— and thus was a tough production problem solved!

Specifications for this tube sheet call for a quarter-inch facing of copper which was formerly riveted to the steel. But the manufacturer found difficulty in machining the surfaces accurately enough to fit them together perfectly. And it proved impossible to eliminate completely the seepage of water through the rivet holes. The answer both to economical and entirely satisfactory production was finally found in "Houdizing" whereby the copper and steel are bonded together to form virtually a single piece of metal.

Perhaps Houde can make complete assemblies or certain parts for you more economically and with greater speed and precision than your own facilities permit. We are doing just that for scores of manufacturers. Your inquiries are invited.

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## Germany Unable to Accept Steel Orders From Far East as Its Supply Is Still Restricted by Home Demand

**H**AMBURG, Germany (*Special Correspondence*).—Cables are coming in from the Far East concerning orders for immediate supply of large quanti-

ties of steel. The Chinese steel industry is deprived completely of raw material and is working only at 40-50 per cent of capacity. Very few of the inquiries, however, have

been executed, because the Continental steel industry is unable to accept the orders.

The pig iron situation is becoming easier, as Belgium-Luxembourg has more pig iron to offer for export. The Dutch blast furnace works, suffering temporarily from lack of iron ores, have got over this point and are now reentering the export market with somewhat larger quantities.

Russia's pig iron exports (large quantities were exported in 1935 and 1936) have come to a complete standstill. No pig iron has been sold for export since the first week of June. It is not yet certain when the Russians will resume the sale of pig iron for export.

The German pig iron cartel has contracted for about 15,000 tons of American pig iron for shipment during three months. The iron is for shipyards and machinery makers. Germany has not bought American pig iron in years.

The recently established Eisen und Erzbergwerke A. G. Hermann Göring (a Government enterprise), established for the purpose of developing iron ore deposits in Germany, has started on five places to construct iron mines. The ores are chiefly poor grade, smelting of which, however, had been greatly developed in Germany during the past few years. When the mines are in operation, the property will be sold to iron works.

A new agreement has been signed between Austria and Germany, by which 1,100,000 tons of high-grade Styrian iron ores will be exchanged for 330,000 tons of coke annually and 50,000 tons of steel-making Austrian iron in exchange for a quantity of anthracite.

Germany's production of finished steel was 6,815,937 tons in the first half of 1937 compared with 6,120,421 tons in the same period last year. Production of sheets, tin plates, hoops and tubes gained sharply. Less rails were produced, and production of bars and joists was only slightly up. Production last year met 100 per cent of the demand, while this year it fell nearly 30 per cent short of the demand.

Belgian makers recently reduced pig iron prices for foundry to £ 5.17.6, but the German works are maintaining £ 6.10.

Germany will construct no steel dwellings in the next several months. As steel is needed for multifold other needs, construction will be stopped.

Belgian workmen's wages in the iron and steel industry were ad-



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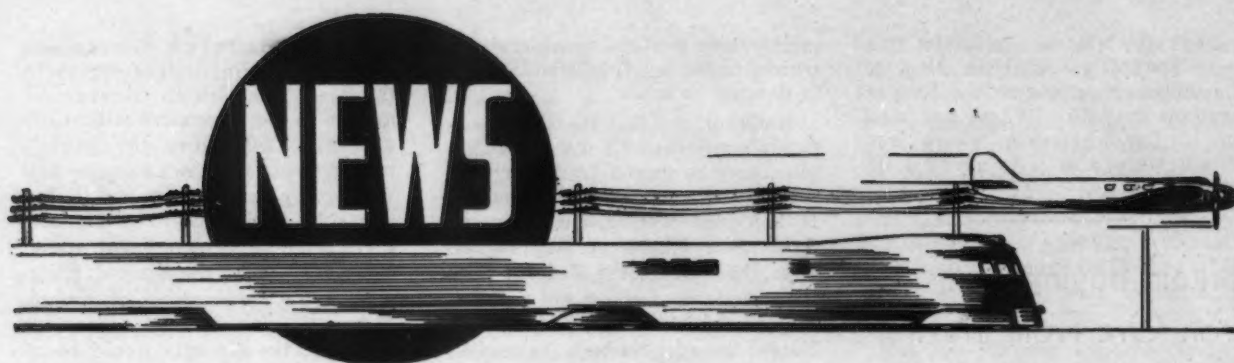
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## Weirton Steel Makes Sweeping Denial Of Labor Board Charges, Asks Dismissal

PITTSBURGH, Aug. 17.—Charging that the recent complaint of the National Labor Relations Board was not made in good faith but was the result of an arrangement between the Steel Workers' Organizing Committee and representatives of the NLRB acting in concert and further accusing the SWOC of consistently violating the provisions and policies of the National Labor Relations Act, the Weirton Steel Co. late last week made a sweeping denial of the board's charges that the company dominated the government, administration of justice, business and relationships of the Weirton district and engaged in unfair labor practices to prevent its employees from joining the SWOC. The company's formal answer was signed by F. A. Hanlin, vice-president of the Weirton Steel Co.

According to the company's answer, the alleged arrangement be-

tween the SWOC and representatives of the NLRB was made to assist the SWOC in its efforts to force Weirton employees, against their wishes, to join and pay dues to unions which the SWOC has attempted to form and to subject the company and its employees to untrue and unfair propaganda and publicity and to unnecessary expense, annoyance and loss of business and wages.

In addition to challenging the right of the NLRB to assume jurisdiction over this case, the Weirton company brought out in its formal answer the fact that some of the employees whom the SWOC claimed were dismissed for union activity are now actually working for the company, others never worked for the company, others were dismissed for good and sufficient reasons and finally that a number were laid off because the department in which they worked

had been shut down for reasons of economy and efficiency and that since that time they have been given work whenever work was available. The company denied emphatically that any employee has been laid off because of union activities.

The Weirton company also denied that the SWOC is a labor organization within the meaning of the National Labor Relations Act, or that it is a representative of the Amalgamated Association of Iron, Steel and Tin Workers in matters relating to the iron and steel industry. Instead of being a bona fide labor organization the answer says that the SWOC is a group of individuals who for their personal gain have used threats, violence, untrue propaganda and other unlawful activities to force steel employees to join unions.

Weirton Steel also denies that it has dominated or interfered with the formation and administration of the Weirton Plan of Representation and the Weirton Steel Employees' Security League or has unlawfully contributed financial and other support to these labor organizations, and then calls the NLRB's attention to the ruling of the United States district court when the Government brought suit

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### NEWS AND MARKET INDEX

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ARE YOU THINKING OF *Steel Transportation*

ON A BIG ENOUGH SCALE?



Transportation of steel under modern production methods, calls for more than big Trucks built today. Trucks *may* be built today, but successful operation depends upon adequate *preparation* to build.

Elwell-Parker has supplied Industrial Power Trucks for handling steel from the time the Industry began using truck equipment at all. For decades this Company has enjoyed the confidence of Plant Engineers responsible for steel transportation.

When trends toward new methods of huge volume production began to take definite form, Elwell-Parker Engineers were prepared by long experience

to design Truck equipment of enough *greater* capacity to equal the industry's vastly-increased output.

Elwell-Parker has matched each expansion in mill production with big, capable, trustworthy Trucks of improved standard design—or even brand-new types when required.

Call in an Elwell-Parker Steel Plant specialist. His recommendations, based upon his own and this Company's 31 years' practical experience, will surely help you.

The Elwell-Parker Electric Company, 4225 St. Clair Avenue, Cleveland, Ohio.

*New Type* **ELWELL-PARKER** *Trucks*

ESTABLISHED 1893 • BUILDING POWER INDUSTRIAL TRUCKS SINCE 1906

against the Weirton company in 1934 wherein it was established that the representation plan was a lawful and effective means of collective bargaining.

#### Specific Reasons for Dismissal

The following specific reasons for dismissal for the Labor Board's complaint were given by the company:

1. The relations between the company and its employees are local and intrastate in character and do not affect, burden or ob-

struct the flow of interstate or foreign commerce or tend to do so.

2. None of the acts or transactions referred to in the complaint have interfered with the company's operations or caused or tended to cause a labor dispute, or to affect interstate or foreign commerce.

3. The Labor Board has no jurisdiction over the company or the subject matter of the complaint and has no authority to hear or determine any of the matters referred to.

4. The National Labor Relations Act does not affect the right of the company to use its discretion in hiring, discharging, rewarding or laying off employees in the course of its business. If the act is so construed, it is in violation of the Constitution.

5. The Labor Board has no authority to exercise any supervisory function over the company's acts as named above. The company's acts with respect to the persons named in the complaint were lawful and for business reasons.

6. The issuance of the complaint, the facts and circumstances surrounding the same, the obvious purpose for which the complaint was filed, and the method of conducting proceedings thereunder constitute a denial to the company of due process of law as guaranteed by the Constitution.

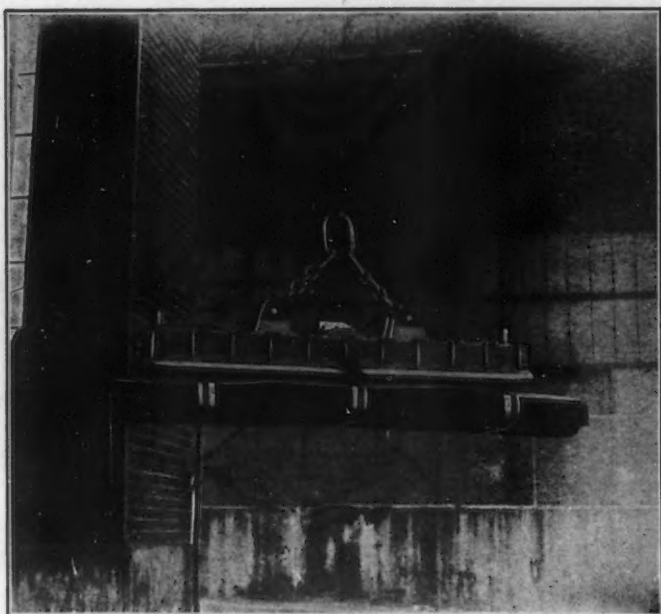
7. The Labor Board is disqualified from exercising a judicial function in the case by reason of the participation of its agents in the institution of the proceedings and their activities on behalf of the SWOC.

8. The procedure established by the Labor Board and determination by the board of the alleged unfair labor practices charged in the complaint are contrary to provisions of the Constitution.

9. The SWOC is not qualified to file the charges on which the complaint is based for the reason that it has consistently violated the provisions and policies of the National Labor Relations Act.

The hearing on the complaint against Weirton began yesterday at New Cumberland, W. Va. The Weirton employees' representatives association will enter the case as a third party and will present its views on the allegations contained in the NLRB's citation.

## OHIO LIFTING MAGNETS



**Two men and an Ohio Rectangular magnet handle 5000 lb. bundles of sheet steel. Note the 2" x 4"s are banded in and help to keep the load flat.**

**They unload 20,000 lbs. in 20 minutes.**

**What is your problem?**

**THE OHIO ELECTRIC MFG. CO.**

**5908 Maurice Ave.,**

**Cleveland, Ohio**

### Die Castings of Magnesium Offered

**T**HE Doehler Die Casting Co., Toledo, has announced the addition of magnesium base alloys to its list of die casting alloys.

Magnesium is fully one-third lighter than aluminum and, on the weight unit basis, is said to be the strongest metal available.

The Doehler company has standardized on three magnesium alloys having a tensile strength of up to 35,000 lb. per sq. in. and an elongation of up to 10 per cent, although other alloys are also available to meet special service requirements.



## Steel Payrolls Cut by Strikes

**E**MPLOYMENT and payrolls of the steel industry during June dropped sharply from the May levels as a result of strike conditions prevailing throughout a large part of the month in plants of four major companies, according to a report issued by the American Iron and Steel Institute.

Number of employees in the industry during June averaged 556,000 compared with 595,000 in May. June payrolls amounted to \$87,520,000 against \$92,931,000 in May. Despite the drop, the June figures were well ahead of June of last year when total steel employment was 498,000 and payrolls aggregated \$62,991,000.

It is estimated that employees in companies affected by strikes lost more than \$9,000,000 in wages as a result of the shut-downs, which in some plants began in the last week in May and continued through June.

Hourly earnings in June of the 495,000 wage earners in the industry who are paid on an hourly, piecework or tonnage basis averaged 87.7c. during June, which compares with 86.6c. in May and 66.9c. in June, 1936.

An average of 39.2 hr. per week was worked by wage earners in June, compared with 38.6 hr. in May and 40.8 hr. in June of last year.

## Carnegie-Illinois To Build Water Plant

**R**UST ENGINEERING CO., Pittsburgh, has been awarded a contract by the Carnegie-Illinois Steel Corp. for a complete water works system for the new Irvin works on the Monongahela River between Dravosburgh and Clairton, Pa. The contract, on which the Rust company is both designer and contractor, will call for an expenditure of approximately \$800,000.

It will be one of the largest water works ever built purely for industrial use and will have an initial capacity of 36,000,000 gal. a day, with provision made for an ultimate capacity of 72,000,000 gal. a day.

Water will be taken from the river through a reinforced concrete open intake 27 ft. wide and 9 ft. deep. Trash gates at the entrance will remove heavy refuse, while traveling screens will pick up light refuse, such as leaves.

A primary lime treatment system will be provided to neutralize the acid content of the water. The rate of feeding the lime will be automatically controlled in accordance with the change in the volume of water pumped and changes in the acid content.

The pump room has been arranged for the immediate installation of three pumps with a capacity of 8500 gal. a min. with space provided for the future installation of three additional pumps.

The pumps will be electrically driven by 1250 hp. a. c. motors. A single stage centrifugal pump will be mounted on each end of the motor shafts. These will be operated in series, so that the water will be discharged from the first pump at a pressure of 150 lb. a sq. in. and will be raised to a pressure of 200 lb. a sq. in. by the second pump.

After passing through the pumps, the water will go through automatic strainers to remove all for-

## UDYLITE HANDIPLATER



The Handiplater may be used with any plating solution common to barrel plating operations. It may also be used for acid tumbling, sawdust drying, etc.

**The Ideal  
Inexpensive  
Unit  
for Plating  
Small  
Loads**

For the occasional handful or for actual production plating of very small parts, the Handiplater is the ideal unit. The capacity of the steel, rubber-lined, plating cylinder ranges from a handful up to  $\frac{1}{2}$  peck of work. The Handiplater operates with a few gallons of plating solution dipped from the regular still or barrel plating tank.

Plating cylinder and anode-cathode assembly are readily detachable, making loading and unloading a simple operation. The detachable cylinder also makes possible the use of a variety of plating solutions with one machine.

The Handiplater is portable, takes up little space. It operates efficiently and is a most sturdy outfit from the fabricated steel base to the steel, rubber-lined, plating cylinder.

Write for descriptive bulletin.

## THE UDYLITE COMPANY

1651 E. Grand Blvd., Detroit, Mich.

New York Chicago Cleveland San Francisco  
39 E. 42nd Street 1943 Walnut Street 3756 Carnegie Ave. 114 Sansome Street

eign matter 0.024 in. in diameter or larger.

The water will be elevated 450 ft. through a 42-in. line to a steel reservoir located on a hill above the plant, with a capacity of 3,750,000 gal.

Part of the water will be delivered directly from the reservoir in a raw state for descaling and cooling. Water requiring further refining will run through an all-steel filtration plant of the Morse

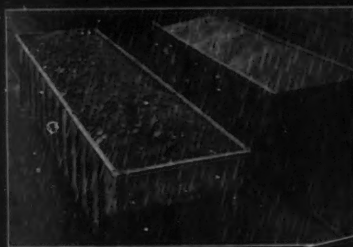

type using lime coagulation equipment and gravity sand filters.

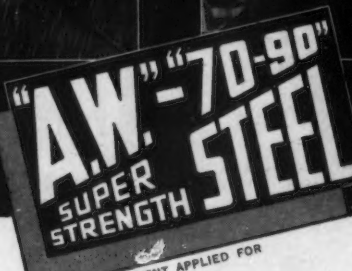
## New Debenture Issue Filed by Bethlehem

BETHLEHEM Steel Corp. has announced the filing of a registration statement with the Securities and Exchange Commission

covering the issuance of \$48,000,000 of new convertible debentures. The interest rate, price and terms of conversion of the new issue have not been settled, but will probably be announced before the registration date becomes effective. Common shareholders entitled to receive rights will be permitted to purchase the debentures at the rate of \$15 principal amount for each share of common stock they hold.

Funds realized through this financing will be used for new construction and for redemption of bond issues that have already been called in.



Its corrosion resistance is four to six times that of ordinary steels.

Complete laboratories insure efficient metallurgical and chemical control.

### Design for Higher Speed and Build for Greater Endurance


"A.W."-70-90" Super Strength Steel reduces weight with no loss of strength. It cuts dead weight as much as 40%. Or, putting it the other way, it just about doubles the strength without weight increase. "70-90" has the added qualities of increased corrosion resistance, fabrication facility by all the usual methods, and excellent welding properties. And its cost is low.

*Write for literature and call on our Engineering Departments for competent collaboration.*




"A.W."-70-90" rendered 20 new New York City refuse trucks lighter and stronger.

"A.W."-70-90" was here adopted to reduce weight without loss of strength.



# ALAN WOOD STEEL CO.

CONSHOHOCKEN, PA.

Branches: Philadelphia, New York, Boston, Detroit, Los Angeles, San Francisco, Seattle, Houston

111 YEARS IRON AND STEEL MAKING EXPERIENCE

## Detroit Scrap Trade Signs UAW Contract

AN agreement recognizing the United Automobile Workers union as sole bargaining agent for scrap iron workers in Greater Detroit has been signed by the Michigan chapter of the Institute of Scrap Iron and Steel, according to Maurice Schlafer, chairman of the institute's negotiating committee. Enforcement of the agreement is contingent upon signatures by individual yard operators, but the union has agreed to have the same terms apply in all cases. Wage rates for a 45-hr. week are 50c. an hr. for labor, 55c. for shear operators, 60c. for truck drivers and 90c. for crane operators. The shop steward system is made official and arbitration is self-imposed, with final recourse only to the State Labor Commissioner. The institute has 18 members in Detroit, Schlafer said, but there are 40 to 50 operators, with approximately 2500 employees.

## Battelle Institute Expands Laboratories

BATTELLE Memorial Institute, Columbus, Ohio, has enlarged its industrial research facilities by opening a new four-story building which will house a complete experimental foundry, according to an announcement by C. E. Williams, director of the institute. The new foundry is equipped for the production of ingots and full-sized castings in steel, special alloys, cast or malleable iron and non-ferrous metals. The melting equipment includes direct and indirect arc furnaces, a high frequency and a low frequency induction furnace, a cupola and several fuel-fired crucible furnaces.





**STEP UP**

# **MACHINE TOOL OUTPUT**

**... WITH SUNOCO**

Increased cost of production can only be offset by increasing the production per unit of equipment.

Close limits of size, rapid removal of metal, decreased down time for tool regrinding and smooth operation of machines are largely dependent on the cutting oil.

Metal cutting plants large and small are finding SUNOCO permits more pieces per tool grind—thus increasing production.

SUNOCO makes possible greater accuracy, better finishes, steps up your production, reduces your down time, decreases your rejects and lowers your operating costs.

## **SUNOCO** EMULSIFYING **CUTTING OIL**

**SUN OIL COMPANY, PHILADELPHIA, PA., U. S. A.**

*Offices and Warehouses in more than 100 cities*

*Subsidiary Companies:*

**Sun Oil Co., Ltd., Montreal, Toronto • British Sun Oil Co., Ltd., London, England**

### **SUNOCO has won widest recognition for:**

1. Aiding machines to produce at rated capacity.
2. Precision work, even at higher speeds and feeds.
3. Longer tool life.
4. Better finish.
5. Fewer rejects.

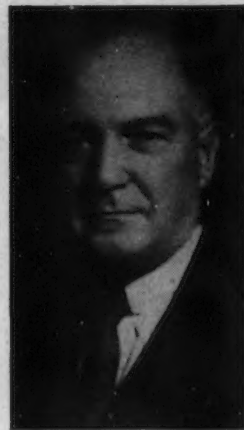




## ..PERSONALS..

ARTHUR H. YOUNG, vice-president in charge of industrial relations, United States Steel Corp., New York, has retired, effective Oct. 1. Mr. Young was one of the

pioneers in the field of industrial relations, where he has been active for 30 years. After graduation from the Joliet Township High School in 1901, he became identified with the Illinois Steel Co., where he worked as roll hand, leverman and timekeeper at the Joliet and South Chicago plants. He later went with the Colorado Fuel & Iron Co. and remained until 1912, when he returned to the Illinois Steel Co. as supervisor of labor and safety. During the fol-



A. H. YOUNG



## FOR BUSES... BY PARISH

The modern motor bus has "lines", and Parish created some of them. Take this wheel housing for example. A good stamping job involving a smooth 3" draw in steel .078" thick. The outside curve is 25 3/4" radius.

Parish knows metals and how to form them. This, plus adequate press equipment, enables us to undertake and successfully carry to completion any difficult pressed metal job you can put up to us.

This service is for you. Won't you avail yourself of it?

**PARISH PRESSED STEEL CO.**  
Reading, Pa.

PACIFIC COAST REPRESENTATIVE  
F. Semer Peterson Co., 57 California St., San Francisco, Cal.

**PARISH** *Specialists in Stampings  
of Distinction*

lowing 12 years he engaged in safety and industrial relations work with the American Museum of Safety, with the Government as chief safety expert with the U. S. Arsenals and Navy Yards, and with the U. S. Employees Compensation Commission and as manager of industrial relations for the International Harvester Co. In 1924 he became industrial relations counsel to Industrial Relations Counselors, Inc., from which he resigned in 1934 to become vice-president in charge of industrial relations with the United States Steel Corp.

WILLIAM BEYE, a member of the law firm of Knapp, Beye, Allen & Cushing, division counsel of U. S. Steel in Chicago for the past 35 years, has been made vice-president in charge of industrial relations. He has always been interested in the broad aspects of industrial relations and is credited with the authorship of the Illinois Workmen's Compensation Act.



JOSEPH B. MONTGOMERY, JR., heretofore identified with the sheet and strip sales department of the Bethlehem Steel Corp., Bethlehem, Pa., has been made vice-president in charge of sales of the Empire Sheet & Tin Plate Co., Mansfield, Ohio. He has had a long experience in the steel industry, having started with the Richmond Structural Steel Co. in 1914. For two years he was sales representative of the former Carnegie Steel Co. in Southern territory. Thereafter for a period of 15 years he was associated with the Berger Mfg. Co., Canton, a subsidiary of the Republic Steel Corp., in various positions, including sales manager, general manager and vice-president. Following his connection





J. B. MONTGOMERY

with the Berger company, Mr. Montgomery was general manager of the Youngstown Pressed Steel Co.

ARTHUR ROEDER, president of Colorado Fuel & Iron Co., will make his headquarters in New York commencing in the fall, according to an announcement he has made at Denver. Sales and other executive offices will remain in Denver. Mr. Roeder will divide his time between New York and Denver.

L. L. BRENHOLTS has been elected president of the Harris Pump & Supply Co. and S. S. WEISIGER, JR., has been promoted to secretary-treasurer of the firm. Mr. Brenholts formerly was associated with the Pittsburgh Gauge & Supply Co. and Mr. Weisiger has been credit manager of the Harris firm. HENRY E. COLE resigned as president of Harris Pump & Supply. F. A. HARING continues as vice-president.

S. L. POORMAN, representative of the Westinghouse Air Brake Co. in the eastern district, has been appointed assistant eastern manager, with headquarters in New York as at present. He became identified with the company in 1912 as an apprentice in the test division of the engineering department. In 1916 he was transferred to the Atlanta Office, where he was advanced to the post of representative five years later. From 1926 to the present he has acted as representative in the Washington, Boston and New York offices of the company.

WALTER DOUGAN WOOD, JR., member of the discus squad of the 1936 U. S. Olympic team, has been appointed to the sales staff of the Philadelphia office of the Lincoln Electric Co. Mr. Wood was graduated from Cornell University in 1936.

L. H. CRAFTS, who has been identified with Lycoming Mfg. Co. marine engine division at Williamsport, Pa., has been appointed sales manager of the automotive and

marine engine divisions of the company.

W. C. GROVE has been appointed manager of the Chicago office of the Buffalo Foundry & Machine Co., Buffalo. He has been with the company for nine years, for the last six as manager of the Toronto office.

M. I. DORFAN, formerly manager of the dust collecting division of the Blaw Knox Co., Pittsburgh,



Perhaps an odd expression—"hair splitting by the ton"—but in Phillie Gear's Shops it's actually an everyday occurrence. Big Gears containing hundreds of teeth—and each tooth exactly like every other tooth within thousandths of an inch. The metal throughout is so perfectly distributed and machined, that the gear (when placed on knife edges)

will readily revolve by the slightest push of the hand. Yes, we repeat, "hair splitting by the ton". We've been doing it for years, and we can only do it because of our modern and versatile machinery, plus gear makers who are true craftsmen.

**Gears and Speed Reducers: Our business for nearly half a century.**

# PHILADELPHIA



# Gears

**Philadelphia Gear Works**  
Industrial Gears and Speed Reducers  
Erie Avenue and "G" Street  
PHILADELPHIA



# SPRINGS

## FOR EVERY MECHANICAL NEED

**COIL SPRINGS**  
**FLAT SPRINGS**  
**WIRE SPECIALTIES**  
**WIRE FORMS**

STRICT ADHERENCE to specifications is a fundamental policy of "American". When you buy American springs, you can be sure that each individual spring will be made in exact accord with your original design—to specified dimensions, tolerances, strength and resiliency.

**SNAP RINGS**  
**LOCK SPRINGS**  
**SPECIAL SPRINGS**

*from Every Type of Wire up to & including 1/2 dia.*

*Send for Quotations*

### AMERICAN SPRING

AND MANUFACTURING CORPORATION  
PARK AVE. HOLLY MICHIGAN

## MANUFACTURERS WIRE . . . . .

Products or parts made from wire usually can be made better or more economically — often both — by taking advantage of the correct combination of composition, temper, finish and shape offered by Continental's wide variety of specialized wire for manufacturing. Furnished in special-analysis open hearth steel; also in \*KONIK, a patented steel containing copper, nickel, and chromium.

### CONTINENTAL STEEL CORP.

General Offices: Kokomo, Indiana  
Plants at Canton, Kokomo, Indianapolis

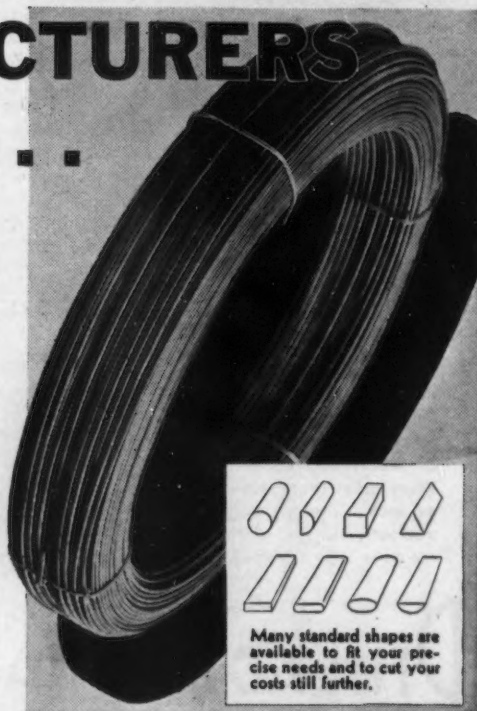
### OPEN HEARTH STEEL

Wire: Bright Basic, Annealed, \*Konik, Special Manufacturers, Galvanized, \*Flame-Sealed.

Wire Rods, Nails, Staples, Bale Ties, Barbed Wire, Fence—15 Types; Gates and Fittings.

Sheets: Black, Galvanized, Special Coated, Roofing and Siding—14 Styles.

\*Trade Mark Reg. U. S. Pat. Office.




# CONTINENTAL

## SHEET STEEL AND WIRE PRODUCTS

now a part of the Pangborn Corp., Hagerstown, Md., has been reemployed by the Pangborn company to act as general field representative under the title of dust control specialist. He will make his head-



**H. M. WILCOX**, H. W. Teeney, and G. F. Begoon (reading down), who, as announced in these columns last week, have been made manager, engineering manager, and sales manager respectively of the new products division of the Westinghouse Electric & Mfg. Co.



quarters in the Chamber of Commerce Building, Pittsburgh.



OTTO W. WINTER has been appointed factory manager of the Columbus McKinnon Chain Corp., Tonawanda, N. Y., manufacturer of chain and hoist equipment. Mr. Winter's previous connections include the Kent-Owens Machine Co., Toledo, as industrial engineer; Whitman & Barnes, Detroit, as general manager of the cutter division; Cincinnati Milling Machine & Cincinnati Grinders, Inc., Cincinnati, as sales engineer, and a period in the U.S.S.R. as a consultant to the Soviet machine tool



OTTO W. WINTER

and cutting tool trusts. He is a member of the American Society of Mechanical Engineers, American Society for Metals and a director and member of the American Society of Tool Engineers. At the present time he is chairman of the newly-formed Toledo chapter of the latter society and past chairman of the Detroit chapter.



LEONARD T. BEECHER, formerly treasurer of the Tennessee Coal, Iron & Railroad Co., has purchased an interest in the Southern States Iron Roofing Co., Savannah, and will become vice-president and secretary-treasurer.



OSCAR P. PATZKE, sales manager of the Smith Steel Foundry Co., Milwaukee, has been elected a vice-president. He was formerly connected with the old National Steel Foundries, Inc., Milwaukee, and more recently with the Milwaukee Steel Foundry Co.



## "LIGHT-CONDITIONED LABORATORY PAYS US DIVIDENDS"

says Pilsener Brewing Co., Cleveland, Ohio

Light-conditioning recently installed in the Pilsener Brewing Company's laboratory in Cleveland is proving a valuable factor in tests for controlling the brewing of beer. According to W. B. Leonard, chief chemist of the brewing company:

"By banishing eyestrain, the new light-conditioning saves the chemist's energy for concentration on precise and particular work. Loss of time through headaches, exhaustion, and other disturbances brought about through difficult seeing conditions has been averted. Our light-conditioned laboratory is paying dividends in the tangible form of better laboratory results."

Like many other thrifty purchasers, the Pilsener Company chose MAZDA lamps made by General Electric when they light-conditioned their laboratory... because these lamps are brighter than ever before and give more light at no additional cost for current.

If you would like further information... how light-conditioning can help increase efficiency in your plant... write to General Electric Company, Dept. 166, Nela Park, Cleveland, Ohio.

*\*Light-conditioning provides the right amount of light and the right kind of lighting for seeing and comfort wherever eyes are used in factories, shops and offices.*

**EDISON MAZDA LAMPS**  
**GENERAL ELECTRIC**



With a G-E Light Meter you can measure the light in your plant and tell whether it meets safe-seeing standards. Costs \$11.50.

Silenced Bowl MAZDA lamps made by G-E are regular MAZDA lamps with a coating of "mirror" silver on the bowl.



## ...OBITUARY...

JOHN BIGGERT, service engineer, United Engineering & Foundry Co., Pittsburgh, for the past 19

years, died at his home in Pittsburgh, Aug. 10. Widely known and beloved throughout the rolling mill industry, Mr. Biggert numbered both high and low among his friendships. His ability and geniality, coupled with an especial aptitude for solving complex operating problems, endeared him to production men and engineers throughout the country. Mr. Biggert was instrumental in the de-

velopment of many of what are now considered standard rolling mill practices. His help was sought and given in such projects as the introduction of anti-friction bearings in the rolling mill field, faster rolling speeds and heavier reductions, stainless steel rolling problems and the application of the four-high mill to the non-ferrous field at a time when widespread opinion considered it unfeasible.

*The Best Shear Blade  
You Can Buy Carries  
This Mark*

MORE TONNAGE PER  
EDGE OF BLADE



**AMERICAN SHEAR KNIFE CO.**  
HOMESTEAD, PENN.



JOHN BIGGERT

For years Mr. Biggert had been an authority on the cold rolling of strips and sheets. He attended Pittsburgh Academy and in 1906 was graduated with an engineering degree from Western University of Pittsburgh (now University of Pittsburgh). He served in the employ of Carnegie Steel Co. and later with Jones & Laughlin Steel Corp. before joining, in 1908, the United Engineering & Foundry Co., where he remained until his death.

♦ ♦ ♦

CHARLES H. HODGES, chairman of the board of the Detroit Lubricator Co., and one of the organizers of the American Radiator Co., died Aug. 7 in Boston after an illness of a month. He had gone East from Detroit to be with a sister who was ill in the same hospital where he died. Born Oct. 26, 1859, Mr. Hodges was graduated from the University of Michigan in 1882 and shortly afterward participated with his father in the founding of the Detroit Radiator Co. In 1892, when it merged with other companies to form the American Radiator Co., Mr. Hodges became treasurer and a member of the executive committee of the new company, with headquarters in Chicago. He became vice-president in 1906. In the following year he was elected president of the Detroit Lubricator Co., becoming board chairman in 1926. He had also served as director of the

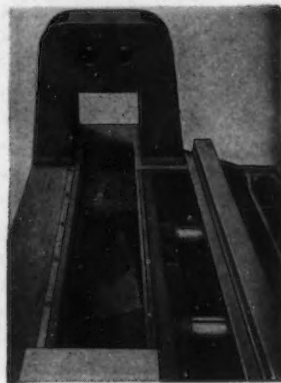
## TRIPLE COMPRESSION SCRAP BALERS



STYLE  
**100 TC**  
(100 x 51 x 36)  
and other sizes

≈

Also Regular  
**Double  
Ram Presses**  
in all sizes



**GALLAND-HENNING**  
MANUFACTURING COMPANY

2724 S. 31st Street Milwaukee, Wisconsin

COMPLETE LINE OF BALERS: Electric and Hydraulic, also HYDRAULIC PRESSES AND PUMPS



American Blower Co., the Detroit Trust Co., the Detroit branch of the Federal Reserve Bank and the Manufacturers National Bank.

ERWIN J. SCHMIDT, sales manager of the Worden-Allen Co., Milwaukee, structural steel fabricator, died on Aug. 13 of a heart attack while playing golf at the North Hills Country Club. He was born in Milwaukee in 1890 and after attending the University of Wisconsin joined the fabricating organization in 1912.

GEORGE WASHINGTON WHITEHOUSE, for many years manager of the Milwaukee branch of the Graton & Knight Co., Worcester, Mass., until his retirement in 1932, died on Aug. 8, aged 76 years.

CURRAN C. MCCONVILLE, factory superintendent of the Four Wheel Drive Auto Co., Clintonville, Wis., for many years, died of a heart attack in his office on Aug. 10, aged 63 years. He was a graduate of the college of engineering of the University of Wisconsin, and after rowing on the university crew four years served as oarsmen coach for several years. He joined the motor truck firm not long after it was established in 1910.

GEORGE R. BOTT, chief engineer and a director of the Norma-Hoffman Bearings Corp., Stamford, Conn., died at his summer home in Poundridge, N. Y., on Aug. 14, aged 58 years. Mr. Bott was graduated from Ohio State University in 1901 and had been connected with the Norma-Hoffman company for 25 years. He was chairman of the ball and roller bearing committee of the Society of Automotive Engineers and was a member of the American Society of Mechanical Engineers.

JOSEPH W. THROPP, secretary and treasurer of the William R. Thropp & Sons Co., Trenton, N. J., died recently.

ADELBERT G. CLARK, for 27 years purchasing agent for the Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y., died on Aug. 6 after a brief illness.

G. E. WEISSENBURGER, president of the Keokuk Electro-Metals Co., Keokuk, Iowa, died recently.

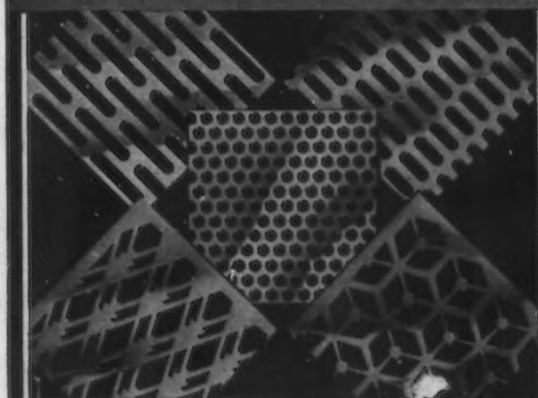
JAMES S. MATTIMORE, vice-president of the Walworth Co., New York, died at the Long Island College Hospital, Brooklyn, on Aug. 12, aged 62 years. He was treasurer of the Manufacturers' Stand-

ardization Society and a director of the Valve and Fittings Institute and the Eastern Supply Association.

Production of a new welding electrode by a cold-heading process is to be started soon in Detroit by P. R. Mallory & Co. at E. Grand Boulevard and Dubois Street, according to John Tebbin, sales man-

ager. The cold-heading process is said to increase life of the electrode three to five times, giving a hardness of 88 Rockwell B, an increase of 10 points over previous tips. Conductivity of the copper-rich alloy used is 85-90 per cent. Through the new process, it is reported, there is a saving of one-third in the amount of metal used in manufacturing.

## PERFORATED METALS



**Industrial - Ornamental**  
ANY METAL ANY PERFORATION

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are in daily use in the foremost steel mills of the United States.

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**THE ALDRICH PUMP COMPANY**  
ALLENTOWN, PENNA.

## Sodium Chloride Tablets Reduce Heat Cases in Gary Mills

A COMMON problem in steel mills during the summer months is the effect of unusually severe heat on the workers. The Carnegie-Illinois Steel Corp. has long recognized the importance of a proper solution to this difficulty and appears to have

progressed far in this direction by making salt tablets available to those men who feel a need for them.

Here is what Dr. Frank Waldo Merritt, chief medical officer, Gary Works, sheet and tin mill, had to say on the subject at a recent meet-

ing of the Carnegie-Illinois Surgical Association at Gary:

"There are many different names and classifications of heat cases. The classification that we use is (1) heat stroke or heat prostration. (2) Sunstroke, heat exhaustion and heat cramps.

"We do not have as many cases now as we did years ago. I recall one hot spell of three days' duration, when in one day we had 105 heat cases. During that spell we had three deaths at Gary and five deaths at South works. In all of these fatal cases, the patients were brought to us in a morbid state from their homes and not one of the eight had reported to us for treatment before going home.

"It is not the hot days that cause severe heat prostration, but the hot nights. If the workmen can get 'cooled down' at night, they will not have the severe attacks. This is demonstrated in the Southwest, where they have very high temperatures during the day but the nights are cool.

"In the mildest form of heat prostration we have headache, moderate rise in temperature and prostration. In more severe forms the skin which at first is covered with perspiration later becomes dry and hot and the temperature rises to the top of the thermometer, the patient is unconscious and cyanotic.

"This type of heat case is the result of direct exposure to the sun's rays. The attack may come on very suddenly and the patient may fall as though he was struck on the head. Usually it starts with headache, dizziness and at times nausea and vomiting. The severe cases are in coma. The skin is hot, the pulse rapid, and the respiration labored. The temperature 108 to 110 plus. There usually is diarrhea and they may have convulsions. If they recover one may have a patient who is unable to stand high temperatures, or have residues of permanent mental and nervous disturbances.

"Regarding treatment in heat prostration and sunstroke:

"We have gone through the oatmeal-water and lemon stages. I might mention that during the 'lemon stage' it was rather expensive. In one hot spell we used \$7,500 worth of lemons. I recall reading a report of a German glass factory, where they had cut down on the heat cases by giving the men pretzels and beer. It was thought that the combination of pretzels and beer had some beneficial action, but we now know that it was the salt on the pretzels.

"The usual intake of sodium

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THE use of INSUROK gears (non-metallic) for mechanical equipment offers industry four sharp profit advantages. 1. Savings in power consumption. 2. Longer life . . . fewer replacements. 3. Maintenance of uninterrupted production schedules. 4. Elimination of noise, screech and howl . . . improved working conditions.

The service of Richardson technicians is available without cost or obligation to assist in the application of INSUROK to production facilities and products. Send for literature and INSUROK Handbook.



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chloride in a day is around 20 grams. One must have an intake of at least two grams a day. Perspiration averages 0.3 of one per cent of sodium chloride. A man at rest perspires about one pint in 24 hr. which is equal to a sodium chloride loss of one and one-half grams. A workman in hot weather may perspire as much as three to four pints in an hour. Therefore, the sodium chloride must be replaced.

"In 1932 at the coke plant of Gary works we started the use of 10-grain tablets of sodium chloride at a few distributing places. In 1933 we increased the number of places at the coke plant and included the blast furnaces. In 1934 the open hearts and central mills and by 1935 it was generally distributed where there was any possibility of heat cases."

## Standardization of Unit Heater Proposed

THE engineering committee of the Industrial Heater Association, in presenting its report on "Standardization of Unit Heaters of the Propeller Type" at the association's meeting in Cleveland, outlined two proposals which the committee felt would be of benefit to the buyer, the engineer and the heating contractor. Specifically, the committee recommended that (a) no manufacturer may make or list more than 25 sizes between the limits of 15,000 and 35,000 B.t.u., (b) price sheets and ratings must state prominently the guaranteed steam working pressures and temperature, (c) listings must include such values as are specifically called for in the standard test code and (d) the formula used for computing the outlet velocity be standardized. It was also suggested that the entire program become effective by June 1, 1938.

## California A.F.A. Selects Committeemen

COMMITTEE chairmen for 1937-38 have been appointed by the Northern California chapter of the American Foundrymen's Association as follows: H. L. Martin, Vulcan Foundry Co., Oakland, membership committee; A. J. Snow, Snow & Galgiani, San Francisco, reception and entertainment; Ivan L. Johnson, Pacific Steel Casting Co., Berkeley, program.

Charles J. P. Hoehn of the Enterprise Foundry Corp., San Francisco, is chairman and John D. Fenstermacher of the Columbia Steel Co., San Francisco, is vice-chairman. George L. Kennard is secretary-treasurer, devoting all his time to the activities of the chapter with office in the Rialto Building, San Francisco.

Directors include Frank C. Holman, Tuolumne Foundry & Machine Works, Sonoma; William Holzhauer, Aluminium Co. of

America, Oakland; Ivan L. Johnson, Pacific Steel Casting Co., Berkeley; E. C. Matignon, Apex Bronze Foundry, Oakland; R. E. Noack, Monarch Foundry & Engineering Corp., Stockton; S. D. Russell, Phoenix Iron Works, Oakland; W. A. Schimmelpfennig, California Foundries, Inc., Oakland; A. J. Snow, Snow & Galgiani, Foundry Supplies, San Francisco. Clarence M. Henderson, manager of the H. C. Macauley Foundry Co., Berkeley, is junior past chairman.



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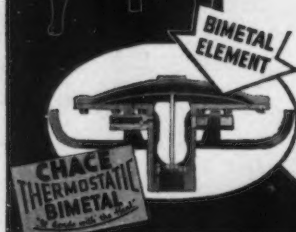
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*used Exclusively in all*  
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**WATER HEATERS**  
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EVERHOT HEATER COMPANY

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## CAST IRON PIPE..

Oakland, Cal., awarded 880 tons of 4, 12, 20-in. to U. S. Pipe & Foundry Co. and 160 tons of 16-in. to American Cast Iron Pipe Co.

Los Angeles Department of Water and Power will open bids Aug. 26 for 2200 tons of 4, 6 and 8-in.

Morgan City, La., plans pipe lines for water system and other waterworks installation. Bond issue of \$50,000 has been voted.

Sonora, Tex., will take bids soon for 3540 ft. of 8-in. and 15,880 ft. of 6-in., for water system; also for quantity of fittings, gate valves, and other waterworks equipment. Fund of \$90,000 has been authorized. H. R. F. Helland, Frost National Bank Building, San Antonio, Tex., is consulting engineer.

Oglesby, Ill., closes bids Aug. 23 for about 2670 ft. of 6-in., for extensions in water system; also for quantity of fittings, valves, hydrants. Wells Engineering Co., Geneva, Ill., is consulting engineer.

Laramie, Wyo., plans main pipe line for trunk water supply from new water source to be secured on Laramie River, where large pumping station and filtration plant will be built. Entire project will cost about \$320,000. E. K. Nelson is city engineer. Black & Veatch, 4706 Broadway, Kansas City, are consulting engineers.

Kirkville, Mo., plans early special election to vote bonds for \$60,000 for pipe lines for extensions in water system, pumping equipment, water-softening equipment and miscellaneous work. Black & Veatch, 4706 Broadway, Kansas City, are consulting engineers.

Willis, Tex., will take bids soon for 1500 ft. of 8-in., and about 10,000 ft. of 6-in. for water system; also for 50,000-gal. capacity elevated steel tank and tower, motor-driven pumping machinery and other waterworks installation. Garrett Engineering Co., Houston, Tex., is consulting engineer.

Craig, Colo., plans pipe lines for extensions in water system. Bond issue of \$30,000 has been voted for this and extensions in sewerage system.

Creedmoor, N. C., has voted bonds for \$24,000 for pipe lines for water system and other waterworks installation, including 100,000-gal. elevated steel tank on 100-ft. tower. Bids will be asked soon. J. B. McCrary Co., Atlanta, is consulting engineer.

State Department of Public Welfare, Columbus, plans quantity of 6-in. for water system at Ohio Sailors' and Soldiers' Orphans Home, Xenia, Ohio; also 100,000-gal. capacity elevated steel tank and tower and other waterworks facilities. Bids will be asked soon. Cost about \$30,000. J. P. Schooley, State Office Building, Columbus, is State architect.

New prices recently announced by General Electric show a decrease of approximately 17 per cent for the entire line of G-E thrusters, a motor-driven device for producing a straight-line thrust through a given stroke in such applications as presses, forming machines, conveyors, brakes, clutches, valves, and heavy doors.

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is somebody's definition of a Floor Stand Tool Grinder. Even if this definition be an exaggeration, it illustrates the desirability of grinders that "stand the gaff" to give *continuously uninterrupted service with minimum maintenance.*

#### THAT IS WHY IT PAYS TO BUY MARSCHKE GRINDERS

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THE MARSCHKE LINE also includes a variety of Buffers and Swing Frame Grinders with direct drive and multi-speed A.C. motors and variable speed D.C. motors in sizes ranging from 1 HP. to 25 HP.

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A catalog showing the full line of Marschke Grinders and Buffers, will be sent promptly upon receipt of request.



**VONNEGUT MOULDER CORP.**  
1807 Madison Ave., Indianapolis, Ind.



## ...PIPE LINES...

United Fuel Gas Co., 1023 Quarrier Street, Charleston, W. Va., plans 18 and 20-in. welded steel pipe line from point near Cedarville, Gilmer County, W. Va., to Marjorsville, Marshall County, W. Va., near Pennsylvania State line, about 96 miles, for natural gas transmission. Compressor plants will be installed at points along route for booster service, with main compressor station in vicinity of Glenville, W. Va. Entire project will cost close to \$2,000,000. Application has been made for permission.

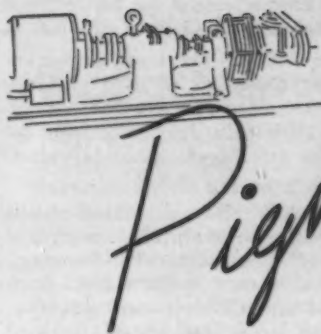
Standard Oil Co. of Ohio, Midland Bank Building, Cleveland, plans 6 and 10-in. welded steel pipe line from Canton, Ohio, to terminal plant at Jefferson Street and Broadway, Cleveland, about 60 miles, for gasoline transmission. Application has been made to Cleveland City Council for permission in municipal area.

Continental Oil Co., Ponca City, Okla., plans welded steel pipe line from Jennings oil field district, La., to terminal plant at Lake Charles, La., about 11 miles, for crude oil transmission. Expansion and improvements will be made at last noted plant, with installation of additional steel tanks and other facilities. Entire project will cost over \$500,000.

United States Engineer Office, Vicksburg, Miss., asks bids until Aug. 23 for 400 sections 24-in., inside diameter, welded steel land pipe, each section 12 ft. 6 in.; five Y-connections, four 24-in., inside diameter, welded steel slip joints, and four 24-in., inside diameter, gate valves and 6500 bolts with nuts; 36 sections of 24-in., inside diameter, welded steel floating pipe, each section 50 ft. long; eight sections of 24-in. inside diameter, welded steel floating pipe, each section 25 ft. long; 800 sections of 24-in. inside diameter, welded steel ball and cone type fill pipe, each section 12 ft. 10 in. long; four sections of 24-in. inside diameter, welded steel fill pipe, each section 3 ft. 6 in.; also for elbows, cast steel pipe flanges, connecting links for ball and cone type pipe, etc. (Circular 18).

Southern Liberty Pipe Line Co., Dallas, Tex., an interest of American Liberty Oil Co., same address, plans new 6-in. welded steel pipe line from recently opened Lodi oil field, Marion County, Tex., to Rodessa district, Cass County, Tex., about 12 miles, for crude oil transmission to company storage terminal at last noted place. An extension in line from Lodi to Jefferson, Tex., about five miles, is planned in near future.

Standard Oil Co. of Louisiana, St. Charles Avenue, New Orleans, has let contract to Williams Brothers, Inc., National Bank of Tulsa Building, Tulsa, Okla., for construction of 6, 8 and 10-in. welded steel pipe line from Roanoke oil field, south Louisiana, to refining plant at Baton Rouge, La., including two branch lines from New Iberia and Jeanerette, La., oil fields to connection at Roanoke, for crude oil transmission to refinery, about 150 miles in all. Diesel engine-driven pumping stations for booster service will be at Sunset, Jeanerette and Roanoke, as well as smaller stations at other points. Cost about \$1,500,000.



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LEBANON STEEL CASTINGS do for the paint maker what paint does for beautiful woodwork.

Unprotected by paint, exposed surfaces would soon be destroyed. Chemical changes set up by the weather would eat it away. The paint maker's equipment can also be eaten by a chemical change—corrosion; his product damaged. His surest protection is stainless steel.

Castings of Lebanon "Circle L" Stainless Steels are widely used in equipment to protect pigment quality. Corrosion—Production Enemy No. 1—is permanently arrested by these staunch alloys. The color trueness of the pigments is safeguarded.

Lebanon "Circle L" Castings give surest protection because they are cast to a standard, not to a price. The pride of fine craftsmen is built into them.

**INDUSTRIAL "G-MEN"**: Production Enemy No. 1 does not limit its wholesale robbery to the pigments trade. Right now, corrosion may be at work in your plant. That's the insidious thing about it—you never know corrosion's stealing from you until its stain shows up on the books—in red. Call in an industrial "G-man"—one of our engineers who knows all the hiding places of Production Enemy No. 1. If this profits pilferer is robbing you, a Lebanon engineer will soon detect it. What's more, he'll know just what to do about it.

## LEBANON STEEL FOUNDRY · LEBANON, PA.



*Stainless and Special Alloy Steel Castings*





...No relief in scarcity of raw steel; demand still heavy.

LONDON, Aug. 17. (By Cable).—The general iron and steel position in England is unchanged,

being characterized by tremendous demand and inadequate supplies.

The British pig iron output in July expanded to 729,300 tons, the highest since September, 1920. Steel output in July was over 1,000,000 tons, despite holiday stoppages.

British rerollers are handicapped by meager arrivals of foreign billets and sheet bars. The shortage of steel seems worldwide. Both Poland and China report scarcity. German iron and steel control office has tightened up control of stocks, and merchants' and build-

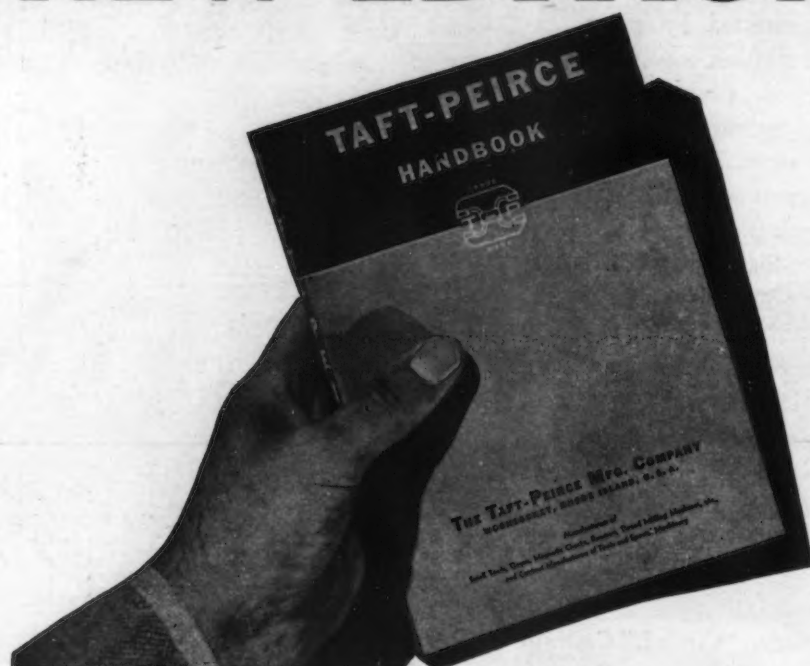
ers' authorized stocks have been reduced from 100 tons to 30 tons.

Continental iron and steel market is calm, but shows some signs that an autumn revival is on the way.

The tin plate market maintains a firm tone. Unfilled orders on hand remain around 6,500,000 base boxes. There is a fair demand from export markets, including South America and Australia.

Pig iron exports during July amounted to 11,923 tons, of which none went to the United States. Total iron and steel amounted to 232,171 tons.

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Missouri-Illinois is asking bids on 50 freight cars and 25 50-ton gondola cars.

South African Railway is inquiring for 300 cattle cars.

United Fruit Co. has ordered one diesel-electric locomotive from American Locomotive Co.

Jones & Laughlin Steel Corp. has placed an order for one 0-4-0 type locomotive with American Locomotive Co.

Dominion Steel & Coal Co. has ordered one 0-4-0 type locomotive from Montreal Locomotive Works.

## National Supply Co. Plans Merger

A PLAN for the merger of Spang, Chalfant & Co., Pittsburgh, and National Supply Co., also of Pittsburgh, into a corporation to be known as the National Supply Co., has been approved by the directors of both companies and will be put before the stockholders at special meetings on Oct. 11 and 13. Spang, Chalfant & Co. is a controlled subsidiary of National Supply Co. The merger will be effected by an exchange of old stock for stock in the new company.

Ladish Drop Forge Co., Cudahy, Wis., suburb of Milwaukee, has started work of installing 23 large exhaust fans in the monitor roof of its main shop, 840 ft. long, to improve working conditions of its men. The firm is said to be the first large forge shop in the United States to undertake so important a program of mechanical ventilation.



## J. H. Hillman, Jr., and Associates Buy Interest in Alan Wood Steel Co.

**A** SUBSTANTIAL, though not controlling, interest in the Alan Wood Steel Co., Conshohocken, Pa., has been acquired by J. H. Hillman, Jr., and associates of Pittsburgh, who are also financially interested in the Sharon Steel Corp., Pittsburgh Steel Co., National Supply Co. (which owns Spang, Chalfant & Co.), Empire Sheet & Tin Plate Co. and the Pittsburgh Coke & Iron Co.

THE IRON AGE has been informed that it would be incorrect to draw any inferences from this transaction that a merger of the steel companies in which the Hillmans are interested is under consideration or that any change in executive personnel of the Alan Wood Steel Co. is contemplated. However, the services of Henry Roemer, head of the Sharon Steel Corp. and the Pittsburgh Steel Co., will be available in an advisory capacity in the development of the Alan Wood business. Some additions to the finishing capacity of the Alan Wood plant are probable, though no definite decision has been reached on this point.

The Alan Wood Steel Co. has pig iron and steel making capacity considerably in excess of its finishing capacity. Its blast furnaces are rated at 360,000 gross tons of pig iron a year and its open-hearth furnaces at 500,000 tons annually, while its finishing capacity consists of 118,000 tons of plates and 96,000 tons of sheets.

Common stock of Alan Wood has been acquired by the Hillman interests in two ways from W. J. Rainey, Inc., and associated interests, first by the outright purchase of 30,000 shares, and, second, by the sale of 60,000 shares to the Neville Coke & Chemical Co. This company, which owns the largest stock interest in the Pittsburgh Coke & Iron Co., is owned by the Hillman Coal & Coke Co. (52 per cent) and W. J. Rainey, Inc. (48 per cent). Thus W. J. Rainey, Inc., still retains an active interest in the Alan Wood Steel Co. through the Neville Coke & Chemical Co. The dominant common stock interest in Alan Wood is still the Koppers Co., which retains ownership of about 110,000 shares of the common stock, while the Neville Coke & Chemical Co. has 60,000 shares, J. H. Hillman, Jr., 18,000 and 12,000 are to be sold to the public through Riter & Co. and Hemphill, Noyes & Co., New York investment firms, at \$18 a share.

Preferred stock in the company is held by the Wood and Heckscher families, which are represented on the board of directors.

The Alan Wood Steel Co., as at present constituted, was organized in 1929, when it acquired the assets of the former Alan Wood Iron & Steel Co. At the time of the organi-

zation, 110,000 shares of the common stock, being 55 per cent of the shares issued, were acquired by the Koppers Construction Co., a subsidiary of the Koppers Co., for \$2,413,889. Such shares were later acquired and are now held by the Koppers Co. The remaining 90,000 shares were issued to W. J. Rainey, Inc., in exchange for 19,750 shares of the capital stock of the Rainey-Wood Coke Co., being the other half of the shares of that company not theretofore owned by the Alan Wood Iron & Steel Co.

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Picks up ladle of molten metal, elevates to desired height, swings load right or left and pours—all with one machine and one operator. Dual tired driving wheels under load for perfect stability. Massive brakes with drums turned in the wheels themselves. Lower cost per year per ton poured. If you have any special material handling problem let Towmotor engineers help you solve it quickly and economically. When you write, ask for new tractor and lift truck bulletins just off the press.

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## Wage and Hour Bill Probably Will Die in House Rules Committee

**W**ASHINGTON, Aug. 17.—The Administration's wage and hour bill, kicked from pillar to post until it bears little resemblance to the original Corcoran-and-Cohen draft, will probably die at the hands of the House Rules Committee, where members have refused its admittance to the House floor.

Futile efforts have been made and will continue to be made to bypass the hostile Rules Committee, but such maneuvers take time—time which cannot be found in the closing days of a Congressional session.

Representative J. Will Taylor, Republican of Tennessee, explains the tie-up in the Rules Committee this way: "If the Labor Committee will meet again and strike out bureaucratic features of the bill and bring in a straight minimum-wage and maximum-hour measure to be executed in the customary manner, they will not only get a rule but they will pass their bill with little, if any, opposition."

Of course, any drastic revision is impossible at this late hour but the statement is regarded as of unusual interest coming from a member of the Rules Committee where, it was understood, objections came principally from Southern Congressmen who insisted the bill would sound the death knell of the South's industrial progress. Substantial opposition from Southerners threatened to block passage of the bill in the Senate but it was finally passed with William Green's prodding on the sidelines.

Doubts as to constitutionality have risen anew with the acceptance by the House Labor Committee of the amendments requested by A. F. of L. president, William Green. Some observers feel that the Green embellishments give such extensive powers to labor organizations that the wage and hour stipulations of 40-40 would be totally ineffective.

In view of the Guffey coal and NRA decisions, doubt has been expressed that the Supreme Court, even with its so-called "enlightened view," would uphold the right of Congress to fix wages and hours when made subject to the approval of labor unions and guided by prevailing wage levels fixed by collective bargaining.

In the NRA decision, Justice Cardozo called such delegation of power "delegation run riot." The

point was more specifically covered in the Guffey coal decision in which the court referred to collective bargaining agreements which, under the coal law, were the basis for determining working conditions. The court declared: "This is legislative delegation in its most obnoxious form. . . . And a statute which attempts to confer such power undertakes an intolerable and unconstitutional interference with personal liberty and private property."

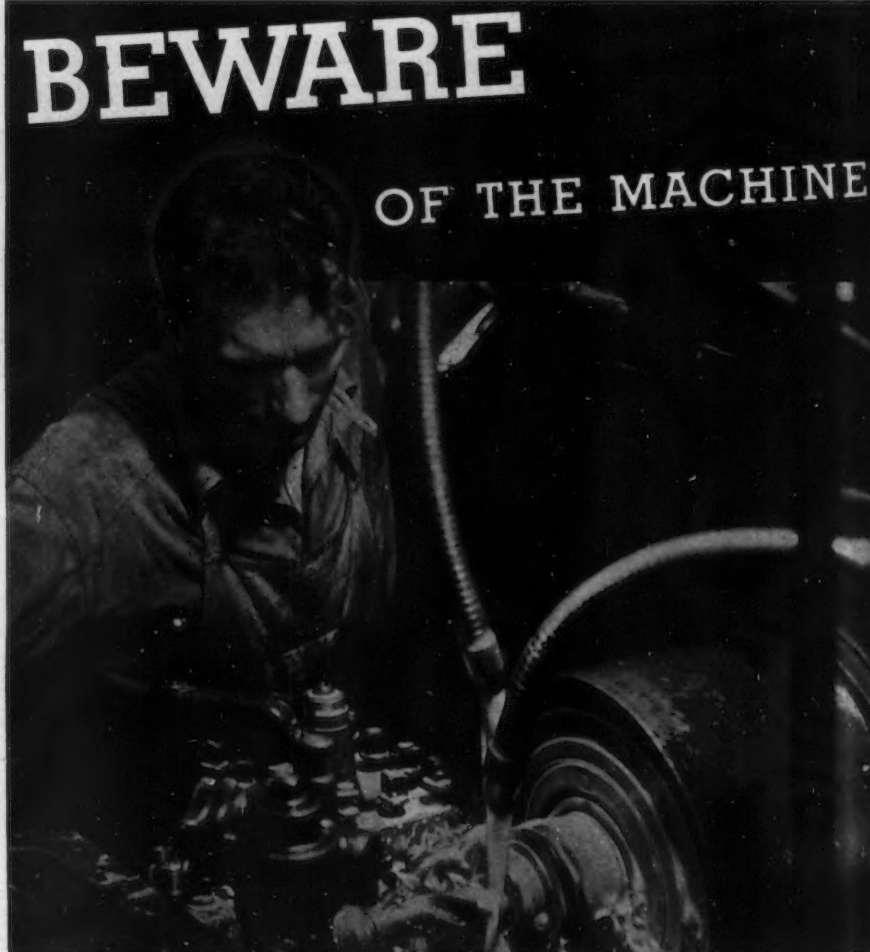
The constitutional angle of the Black-Connery wage-hour bill is receiving more attention since the designation by the President of Hugo L. Black, Senate sponsor of the measure, to succeed Associate Justice Van Devanter on the high bench.

Should Black have the opportunity to pass on such a bill, it is doubtful even he would give the Green amendments his constitutional O. K. He has been represented

as feeling that Congress should specify definite standards as to wages and hours, and the Senate draft, some observers say, is illustrative of this point. They also cite his 30-hr. week bill which was abandoned later for the NRA substitute.

## SAE Aircraft Meeting To be Held Oct. 7-9

**T**HE second annual National Aircraft Production Meeting sponsored by the Society of Automotive Engineers will take place in Los Angeles, Oct. 7-9. Producers and designers of aircraft will gather to attend the presentation of 16 papers prepared for the meeting. Stainless steel and its place in aviation will be covered in a paper by E. G. Budd Mfg. Co. The use of steel, magnesium and die castings and molded plastics is also listed for discussion. Other papers scheduled for reading include "Factory Equipment and Tooling" and "Production Tools for Airplanes."



# BEWARE

## OF THE MACHINE



# Senator Holt Flays Labor Board; Weirton Workers Carry Banners "We Are Satisfied—Let Us Alone"

PITTSBURGH, Aug. 17.—More than 8000 employees of the Weirton Steel Co., Weirton, W. Va., turned out Sunday to hear United States Senator Rush D. Holt, W. Va., deliver a bitter denunciation of the National Labor Relations Board, which he accused of "unfair and lopsided decisions." Congressman Arthur P. Lamneck of Columbus, Ohio, also spoke.

Preceding the addresses, the Weirton Steel Co. Security League members staged a two-mile long parade featured by more than 200 banners, some of which read "We Are Satisfied—Let Us Alone," "We Voted 98 Per Cent for the Employees' Representative Plan," "Our Answer to the NLRB Is 'We Are Happy and Contented—Let Us Alone'."

Striking out boldly against what he considers unfair decisions on

the part of the NLRB, Senator Holt said, "Unless there is a change for the better and it settles down to try to conciliate and help industrial strife, rather than spread difficulties, and unless it stops these everlasting, lopsided decisions, I intend to present the facts to the United States Senate in the next session and ask that body for an investigation of the board." He further stated that "It is not that the National Labor Relations Board leans toward labor in its decisions; that would be all right . . . but the most flagrant misuse of power and authority comes when the board acts as a sales promoting agency for one union against another, when the board arbitrarily tries to upset an existing union contract in favor of CIO recognition." He referred to a manufacturing plant near Pittsburgh which had signed a closed

shop contract with an AFofL affiliate.

He denounced John L. Lewis as an autocrat and declared that in recent strikes CIO's autocratic rule would cost American workers \$9,000,000.

Developing his point as to the close relationship between the CIO and the NLRB, Senator Holt remarked that Clinton S. Golden, of Pittsburgh, regional director of the SWOC, was formerly regional director of the NLRB. He further said, "But the CIO in cooperation, and very close cooperation with the NLRB wants the board not to decide the issue on whether the matter is right or wrong, but on the issue that they should decide for the CIO because John Lewis gave one-half million dollars of the money taken out of the wages of miners and other unions to the campaign fund."

In winding up his talk, Senator Holt emphasized that labor does not need a partisan board to get its just dues and added "of course when ruthless labor leaders want something that is wrong and unfair they desire a prejudiced board."

The parade and the addresses were sponsored by the Weirton Steel Employees' Security League, which was organized some time ago to combat "outside unions." This organization also finances the operation of the employees' representation plan through proceeds of social and athletic events.

## THAT'S *"Getting out the work"*

It may work as well as the day you bought it a few years ago. But that's not good enough.

A modern Warner & Swasey Turret Lathe produces 30% more than 1929 machines, with far more precision, and can combine as many as 5 operations into 1, with less effort on the part of the operator.

### ONE OF A HUNDRED CASES

One shop had a lathe seven years old. Job time was 4.2 minutes. With a new Warner & Swasey Turret Lathe, job time was cut to 1.5 minutes.

There is very likely just as good a chance to save, in your operation today. We're prepared to search it out. No obligation. Just write



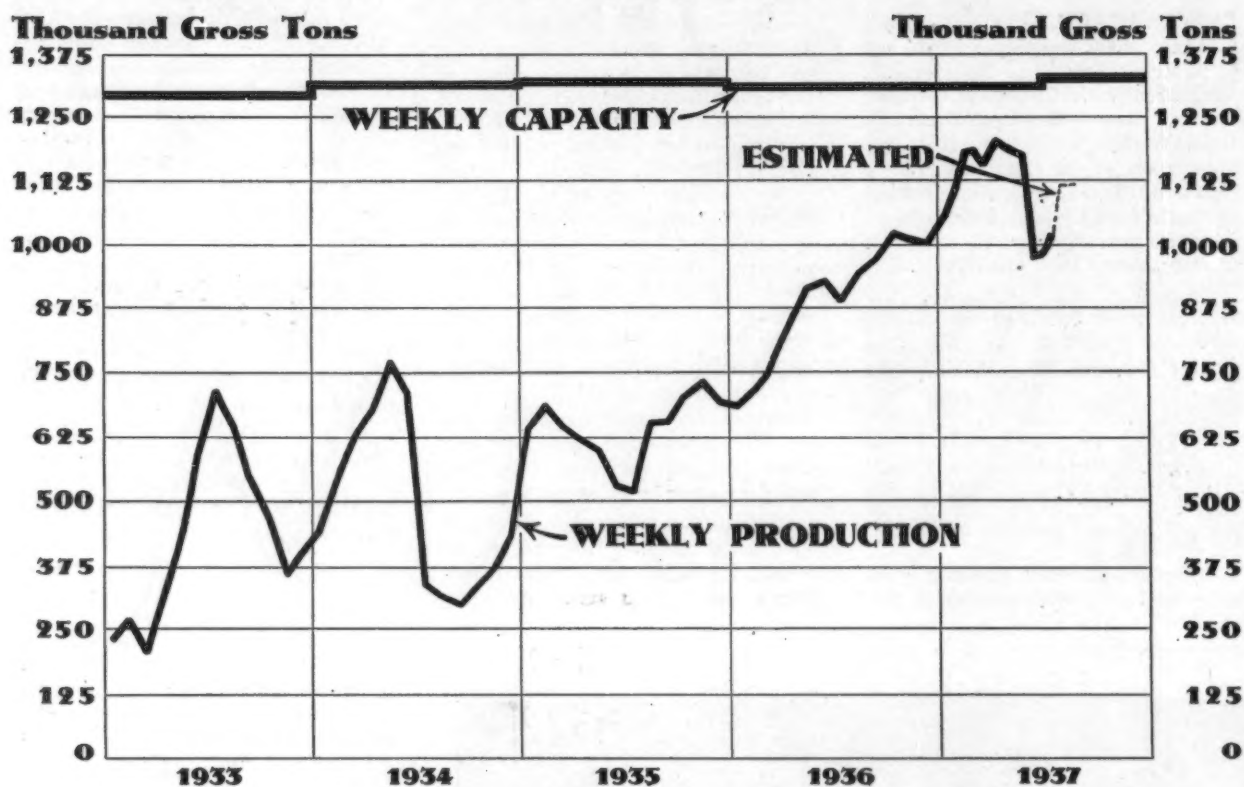
## Wolfram Prices Rise On Chinese Crises

LONDON (Special Correspondence)—The intensive production of steel in the United Kingdom has resulted in a greatly increased demand for wolfram. Lately the market has been influenced by fears that the present tension between Japan and China may interfere with the moderate supplies that are available, and this is partly responsible for the sustained upward trend of prices. Moreover, the recent advance in the prices of Chinese wolfram has been accentuated by the fact that a substantial proportion of the available supplies is in the hands of speculators.

A settlement of the trouble in China would undoubtedly be followed by some decline in the present level of values, but the fall may only be moderate owing to the very high level of steel production now in progress throughout western Europe.

# PRODUCTION

Average Weekly Production of Open-Hearth and Bessemer Steel Ingots by Months, 1933-1937, and Estimated Production by Weeks in 1937



Figures for the Current Week Are Not Indicated on the Chart Until the Following Week

## STEEL INGOT PRODUCTION BY DISTRICTS: Per Cent of Capacity

	Current Week	Last Week
Pittsburgh .....	80.0	83.0
Chicago .....	86.0	85.5
Valleys .....	82.0	85.0
Philadelphia .....	70.0	70.0
Cleveland .....	81.0	81.0
Buffalo .....	88.5	88.5
Wheeling .....	97.0	95.0
Southern .....	71.5	76.5
Ohio River .....	92.5	92.5
Western .....	95.0	95.0
St. Louis .....	86.5	76.5
Detroit .....	100.0	100.0
Eastern .....	98.0	70.0
Aggregate .....	83.0	84.5

## Weekly Booking of Construction Steel

	Aug. 17, 1937	Aug. 10, 1937	Week Ended July 20, 1937	Aug. 18, 1936	Year to Date 1937	1936
Fabricated structural steel awards.....	12,450	26,800	16,000	29,495	759,290	729,045
Fabricated plate awards.....	2,270	0	115	4,570	68,395	174,385
Steel sheet piling awards.....	525	730	0	2,420	36,810	39,100
Reinforcing bar awards.....	11,060	6,635	6,820	2,230	179,885	246,870
Total Lettings of Construction Steel....	26,305	34,165	22,935	38,715	1,044,380	1,189,400



## ...SUMMARY OF THE WEEK...

*... Steel orders show moderate improvement, but operations decline.*

• • •

*... Automobile industry buying expected to continue in upward trend.*

• • •

*... Pig iron prices reaffirmed for fourth quarter.*

**A** TURNING point for the better in the volume of new steel business seems to be indicated by the week's developments. Although the improvement is moderate, it extends to all territories, and has been brought about largely by an increase in buying for automobile production and by replenishment orders from miscellaneous users who have been drawing upon inventories during recent weeks.

Considerably more tonnage will be required to bridge the gap between shipments and new business. Steel companies' backlogs are being further reduced by an excess of shipments over new orders, but an approximate balance was reached by a leading Chicago producer during the week, and it is expected that larger tonnages from the automobile industry by the end of the month and from miscellaneous consumers will again build up backlogs by September.

While the volume of buying begins to show an upward trend, mill operations are declining for the country as a whole. Though there have been gains, the losses more than offset these, bringing the average rate down to 83 per cent from an estimated 84½ per cent last week. The Chicago district has gained a half point to 86 per cent and the Wheeling district two points to 97 per cent, but Pittsburgh has lost three points to 80 per cent and Youngstown three points to 82 per cent. Further evidence of contrary trends is shown by a drop in production at Birmingham and a sharp gain at St. Louis.

**T**HE automobile industry appears to be the key to more pronounced resumption of steel buying for autumn requirements. It was expected that volume steel orders for new models would come earlier than this, but the motor car companies have been delayed in getting into production on 1938 cars. Current output of cars is higher than

was ever before reached in the final month of a model year, it being estimated that 375,000 units will be assembled during August, last week's total having risen above 100,000.

Industries that are taking steel in large amounts are can manufacturing, farm implements and tractors and oil well drilling and storage. There is no let-up in the pressure for tin plate for can making; farm equipment makers have closed for some of the steel required for machinery to be built for 1938 delivery, while the demand for oil country pipe is holding at a good level. Manufacturers of power shovels and cranes are also very busy and are taking steel in substantial quantities.

The Shell Petroleum Corp., St. Louis, has placed an order for 250 miles of 8-in. pipe requiring 15,000 tons of steel.

Railroad requirements are relatively light at the moment, and there is also a lull in awards of steel for building construction, but these lines, which, with automobiles, lead in steel consumption, are expected to make a better showing during the fall.

**P**RESENT pig iron prices have been reaffirmed for the fourth quarter by a number of the leading producers in the North and South. Announcements were not expected before Sept. 1, but melters brought pressure on producers to make known their position at once so that they could make plans for fourth quarter. One large producer has stated that continuance of the current price schedule does not close the door to an advance before the end of the year, if such should be warranted. Pig iron shipments are gaining at Chicago and the improvement will be more pronounced as foundries making castings for the automobile industry swing into production of parts for new models. In New England, sales of castings for delivery over the remainder of the year have shown a sharp increase.

A leading maker of stainless steel has announced the continuance of present quotations through the fourth quarter. This item was not included in the announcements in late July covering steel products generally. A second price advance on heavy coated roofing terne plate, the two totaling \$1 a base box, has taken place.

Strength in steel scrap continues, but no further advances have occurred in Pittsburgh, Chicago and Philadelphia, leaving THE IRON AGE composite price unchanged at \$20.50. However, a sale of 25,000 tons to a Youngstown mill brought \$22.50 for the No. 1 grade, a rise of \$1 a ton.



## ...PITTSBURGH...

*...Turning point in steel orders seems to be indicated.*

... ..

*...Pittsburgh operating rate off three points; Wheeling up two.*

... ..

*...Shell Petroleum Corp. awards 250-mile pipe line, taking 15,000 tons.*

PITTSBURGH, Aug. 17.—Although lighter backlogs at some plants have resulted in a three-point drop in the Pittsburgh ingot rate to 80 per cent capacity, incoming business in the past week has shown improvement which might indicate the beginning of fall buying. The Wheeling district has advanced two points to 97 per cent. A week ago total business was running from 15 to 20 per cent below the corresponding July period, whereas in the past few days part of the gap has been closed, with aggregate bookings ranging between 8 and 10 per cent below last month's figure.

Specifications for semi-finished steel, wire products, plates and shapes and sheets have increased and there are signs of better activity in hot-rolled bar sales, although the latter improvement is not general. The influx of oil-country goods specifications continues unabated. Shell Petroleum Corp., St. Louis, has placed an order with National Tube Co., Pittsburgh, for 250 miles of 8-in. seamless tubing, totaling approximately 15,000 tons.

With other districts reaffirming pig iron prices for fourth-quarter delivery, it is expected that local producers will follow suit, and, even though formal announcements are not made, business for last-quarter shipment will be taken at present prices.

Structural shape and plate inquiries and awards show little change from recent activity, but some fair-sized contracts for concrete bars have been closed within the past week.

Raw materials markets are steady but uneventful.

### Pig Iron

Aggregate business continues light, but the volume of new orders in the past week was a slight improvement from recent weekly averages. Consumers are still unhurried in their buying, taking iron only as needed. Depleted stocks at some producers' plants are being steadily replenished; however, steel-making iron remains comparatively scarce. Prices will be unchanged for the fourth quarter.

### Semi-Finished Steel

Incoming business improved considerably during the past week compared with the previous period. More active buying of forging billets is looked for from shops supplying the automobile trade. The movement of sheet and tin bars continues unabated and demand for wire rods has picked up in the past few weeks.

### Bolts, Nuts and Rivets

Incoming business will not support more than 50 to 60 per cent of operations. Meanwhile some orders for automobile manufacturers have been placed, but the tonnages are not large. Consensus of opinion in this district does not indicate a change in fourth quarter prices, although no formal announcements are expected before Sept. 1.

### Bars

Although total hot rolled bar tonnages in the past week are not impressive, there is evidence of an improved demand. Some producers report a slightly better flow of business from automobile manufacturers, and this trend is expected to continue upward. Real active

buying by all types of consumers is not expected to start much before Sept. 1.

### Cold Finished Bars

The volume of incoming business is barely sufficient to support 50 to 55 per cent operations, but producers are counting heavily on a substantial pick-up sometime within the coming two or three weeks when automobile companies are expected to increase their purchases for 1938 models. Some specifications have been received from agricultural implement makers, jobbers and textile machinery manufacturers.

### Steel Sheet Piling

Demand has improved slightly, and inquiries include quite a few small projects of 100 to 150 tons. Bids will be taken Aug. 23 for approximately 1000 tons of piling for a harbor and dock project at Waukegan, Ill.

### Plates and Shapes

Structural plate and shape specifications have shown substantial improvement during the past week. This type of business continues to get a fair amount of support from factory building and tank construction. The volume of structural inquiries and awards shows no particular change from recent levels. American Bridge Co., Pittsburgh, will furnish 850 tons of material for a market building at New York City.

### Sheets

Due almost entirely to a slightly better flow of automotive orders, sheet specifications in the past week reflect a small improvement from the previous period. Miscellaneous buying has shown no appreciable change, although better activity is expected when manufacturers' fall programs have been finally decided upon. Deliveries are a trifle easier, with one large producer promising cold rolled sheets in five to six weeks, heavy hot rolled in eight to nine, and hot rolled annealed and galvanized sheets in 14 to 15 weeks.

### Wire Products

Total wire sales have improved considerably in the past week owing to better demand for wire rods and manufacturers' wire. Some producers are interpreting this increase in business as the beginning of a fall buying program. Merchant wire specifications continue light, but the number of jobbers coming into the market has been increased. Considerable thought is being given by wire producers, for the sake of consistency, toward



# A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous  
Advances Over Past Week in Heavy Type, Declines in Italics

## Rails and Semi-finished Steel

Per Gross Ton:	Aug. 17, 1937	Aug. 10, 1937	July 20, 1937	Aug. 18, 1936
Rails, heavy, at mill.....	\$42.50	\$42.50	\$42.50	\$36.37½
Light rails, Pittsburgh .....	43.00	43.00	43.00	35.00
Rerolling billets, Pittsburgh.	37.00	37.00	37.00	30.00
Sheet bars, Pittsburgh .....	37.00	37.00	37.00	30.00
Slabs, Pittsburgh .....	37.00	37.00	37.00	30.00
Forging billets, Pittsburgh..	43.00	43.00	43.00	37.00
Wire rods, Nos. 4 and 5. P'gh	47.00	47.00	47.00	38.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb...	2.10	2.10	2.10	1.80

## Finished Steel

Per Lb.:	Cents	Cents	Cents	Cents
Bars, Pittsburgh .....	2.45	2.45	2.45	1.95
Bars, Chicago .....	2.50	2.50	2.50	2.00
Bars, Cleveland .....	2.50	2.50	2.50	2.00
Bars, New York .....	2.78	2.78	2.78	2.30
Plates, Pittsburgh .....	2.25	2.25	2.25	1.90
Plates, Chicago .....	2.30	2.30	2.30	1.95
Plates, New York .....	2.53	2.53	2.53	2.19
Structural shapes, P'gh.....	2.25	2.25	2.25	1.90
Structural shapes, Chicago..	2.30	2.30	2.30	1.95
Structural shapes, New York	2.5025	2.5025	2.5025	2.16¼
Cold-finished bars, P'gh.....	2.90	2.90	2.90	2.25
Hot-rolled strips, P'gh.....	2.40	2.40	2.40	1.95
Cold-rolled strips, P'gh.....	3.20	3.20	3.20	2.60
Hot-rolled annealed sheets, No. 4, Pittsburgh .....	3.15	3.15	3.15	2.50
Hot-rolled annealed sheets, No. 24, Gary .....	3.25	3.25	3.25	2.60
Sheets, galv., No. 24, P'gh..	3.80	3.80	3.80	3.20
Sheets, galv., No. 24, Gary.	3.90	3.90	3.90	3.30
Hot-rolled sheets, No. 10, Pittsburgh .....	2.40	2.40	2.40	1.95
Hot-rolled sheets, No. 10, Gary .....	2.50	2.50	2.50	2.05
Cold-rolled sheets, No. 20, Pittsburgh .....	3.55	3.55	3.55	3.05
Cold-rolled sheets, No. 20, Gary .....	3.65	3.65	3.65	3.15
Wire nails, Pittsburgh .....	2.75	2.75	2.75	2.10
Wire nails, Chicago dist. mill	2.80	2.80	2.80	2.15
Plain wire, Pittsburgh .....	2.90	2.90	2.90	2.40
Plain wire, Chicago dist. mill	2.95	2.95	2.95	2.45
Barbed wire, galv., P'gh....	3.40	3.40	3.40	2.60
Barbed wire, galv., Chicago dist. mill .....	3.45	3.45	3.45	2.65
Tin plate, 100 lb. box, P'gh.	\$5.35	\$5.35	\$5.35	\$5.25

## Pig Iron

Per Gross Ton:	Aug. 17, 1937	Aug. 10, 1937	July 20, 1937	Aug. 18, 1936
No. 2 fdy., Philadelphia....	\$25.76	\$25.76	\$25.76	\$21.3132
No. 2, Valley furnace .....	24.00	24.00	24.00	19.50
No. 2, Southern Cin'tl.....	23.69	23.69	23.69	19.44
No. 2, Birmingham† .....	20.38	20.38	20.38	15.88
No. 2, foundry, Chicago*....	24.00	24.00	24.00	19.50
Basic, del'd eastern Pa. ....	25.26	25.26	25.26	20.3132
Basic, Valley furnace .....	23.50	23.50	23.50	19.00
Malleable, Chicago* .....	24.00	24.00	24.00	19.50
Malleable, Valley .....	24.00	24.00	24.00	19.50
L. S. charcoal, Chicago.....	30.04	30.04	30.04	25.2528
Ferromanganese, seab'd car-lots .....	102.50	102.50	102.50	75.00

† This quotation is subject to a deduction of 33c. a ton on phosphorus content of 0.70 per cent or higher.  
\*The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

## Scrap

Per Gross Ton:				
Heavy melting steel, P'gh...	\$22.00	\$22.00	\$20.00	\$16.25
Heavy melting steel, Phila..	19.75	19.75	19.25	14.25
Heavy melting steel, Ch'go.	19.75	19.75	18.25	15.75
Carwheels, Chicago .....	19.75	19.75	19.25	15.00
Carwheels, Philadelphia ...	20.75	20.75	19.75	15.75
No. 1 cast, Pittsburgh.....	20.25	20.25	19.25	14.75
No. 1 cast, Philadelphia ...	21.25	21.25	20.25	15.75
No. 1 cast, Ch'go (net ton)...	16.75	16.75	15.75	13.50
No. 1 RR. wrot., Phila.....	19.75	19.75	19.75	14.75
No. 1 RR. wrot., Ch'go (net)	19.75	19.75	16.50	13.75

## Coke, Connellsville

Per Net Ton at Oven:				
Furnace coke, prompt .....	\$4.35	\$4.35	\$4.35	\$3.65
Foundry coke, prompt .....	5.00	5.00	5.00	4.00

## Metals

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Electrolytic copper, Conn....	14.00	14.00	14.00	9.75
Lake copper, New York....	14.12½	14.12½	14.12½	9.87½
Tin (Straits), New York....	\$9.75	60.125	60.375	42.00
Zinc, East St. Louis .....	7.25	7.25	7.00	4.80
Zinc, New York .....	7.60	7.60	7.35	5.17½
Lead, St. Louis .....	6.35	6.35	5.85	4.45
Lead, New York .....	6.50	6.50	6.00	4.60
Antimony (Asiatic), N. Y....	15.25	15.375	15.00	12.50

On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

# The Iron Age Composite Prices

## Finished Steel

Aug. 17, 1937	2.605c. a Lb.
One week ago	2.605c.
One month ago	2.605c.
One year ago	2.159c.

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products represent 85 per cent of the United States output.

	High	Low
1937.....	2.605c., Mar. 9;	2.330c., Mar. 2
1936.....	2.330c., Dec. 28;	2.084c., Mar. 10
1935.....	2.130c., Oct. 1;	2.124c., Jan. 8
1934.....	2.199c., April 24;	2.008c., Jan. 2
1933.....	2.015c., Oct. 2;	1.867c., April 18
1932.....	1.977c., Oct. 4;	1.926c., Feb. 2
1931.....	2.037c., Jan. 13;	1.945c., Dec. 29
1930.....	2.273c., Jan. 7;	2.018c., Dec. 9
1929.....	2.317c., April 3;	2.273c., Oct. 29
1928.....	2.286c., Dec. 11;	2.217c., July 17
1927.....	2.402c., Jan. 4;	2.213c., Nov. 1

## Pig Iron

\$23.25 a Gross Ton
23.25
23.25
18.84

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.

High	Low
\$23.25, Mar. 9;	\$20.25, Feb. 16
19.73, Nov. 24;	18.78, Aug. 11
18.84, Nov. 5;	17.83, May 14
17.90, May 1;	16.90, Jan. 27
16.90, Dec. 5;	15.66, Jan. 3
14.81, Jan. 5;	13.66, Dec. 6
15.90, Jan. 6;	14.79, Dec. 15
18.21, Jan. 7;	15.90, Dec. 16
18.71, May 14;	18.21, Dec. 17
18.59, Nov. 27;	17.04, July 24
19.71, Jan. 4;	17.54, Nov. 1

## Steel Scrap

\$20.50 a Gross Ton
20.50
19.17
15.42

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

High	Low
\$21.92, Mar. 30;	\$17.08, June 15
17.75, Dec. 21;	12.67, June 9
18.42, Dec. 10;	10.33, April 22
13.00, Mar. 13;	9.50, Sept. 25
12.25, Aug. 8;	6.75, Jan. 2
8.50, Jan. 12;	6.43, July 5
11.33, Jan. 6;	8.50, Dec. 29
15.00, Feb. 18;	11.35, Dec. 9
17.53, Jan. 29;	14.08, Dec. 2
16.50, Dec. 31;	13.08, July 2
15.25, Jan. 11;	13.08, Nov. 22

eliminating the differences between merchant wire selling practices in the North and the South, now that the galvanized roofing sheet situation has been cleared.

### **Tin Plate**

Tin plate operations continue at 100 per cent capacity, with little likelihood of a change for some time. Pressure for delivery is even more persistent than a week ago. For the second time in the past few weeks Follansbee Brothers Co., Pittsburgh, has raised the price of heavy coated roofing terne plate 50c. a package, making a total advance of \$1 a package or 50c. a base box. Other makers are expected to follow suit on the total increase.

### **Strip**

On the whole, incoming business continues light, although some producers report an increase in specifications during the past week. The improvement reflects better activity on the part of the automobile parts makers and this trend is expected to become more marked in the near future.

### **Railroad Business**

Railroad buying in the past week is mostly confined to locomotive purchases. Carnegie-Illinois Steel Corp. has ordered four 0-4-0 type yard engines for its Homestead works from H. K. Porter Co., Pittsburgh. Newbury and South Shore Railroad has placed an order with Lima Locomotive Works for two 0-6-0 type switching engines. All of the above locomotives will be equipped with rolled steel frames. Although a recent inquiry from the South African Railroad involved 45 locomotives, there is talk in the trade that this might be increased to 150.

### **Tubular Goods**

Shell Petroleum Corp., St. Louis, has placed an order with National Tube Co., Pittsburgh, for 250 miles of 8-in. seamless tubing involving approximately 15,000 tons. The line will run from Roxana, Ill., to Indianapolis, Ind. Meanwhile oil country goods specifications are holding up unusually well and backlogs, which already run from four to six weeks, are increasing at some plants. Movement of standard pipe from jobbers' warehouses in July showed an improvement from June volume which should be reflected soon in better specifications to the mills.

### **Reinforcing Bars**

Awards during the past week were numerous and included some fair-sized business. Two sewer con-

tract projects at Queens, N. Y., involving 3000 tons of bars were awarded to Igoe Brothers, Inc., Newark, N. J. Bethlehem Steel Co. will furnish 3000 tons of reinforcing bars for a model testing basin at Carderock, Md.

### **Coal and Coke**

Beehive furnace and foundry coke activity continues uneventful, with the total number of ovens in operation changed but little from a month ago. Coal movement is rather slow and a fair-sized accumulation of slack has materialized.



**..SAN FRANCISCO..**

**... Dry dock to take up to 14,000 tons of steel; other large projects in offing.**

**S**AN FRANCISCO, Aug. 16.—Between 11,000 and 14,000 tons of steel are involved in the graving dry dock for the Mare Island Navy Yard on which Geo. Pollock Co. of Sacramento was low bidder at \$2,636,875 on the general contract. In addition to 775 tons of reinforcing bars, there will be from 3000 to 10,000 tons of sheet steel piling and possibly also 800 tons of spuds, depending upon the type of construction finally adopted by the contractor. Funds have been appropriated to the Bureau of Yards and Docks of the Navy Department and the contract is expected to be let and construction begun within the next 60 days.

Except for 390 tons of reinforcing bars involved in a San Francisco sewage disposal plant, for which bids will be opened Aug. 18, and an aggregate of 500 additional tons for the reclamation service on the All-American Canal in Arizona for opening during the current month, there are few new major projects.

Los Angeles Department of Water and Power has called for bids on an aggregate of 2200 tons of cast iron pipe for opening Aug. 26.

A \$56,875,000 development project for flood control, irrigation, and transportation in the Willamette Valley, Oregon, has been recommended by the U. S. Engineers Office at Portland. This involves dams and reservoirs on the Willamette, McKenzie, Santiam, Row and Long Tom rivers. It is recom-

mended that the Government furnish \$46,940,000 and local interests \$10,000,000 for costs of lands, easements and rights-of-way.

Bond election will be held at San Francisco on Nov. 2 to vote \$49,250,000 for subways for a rapid transit system.

Application has been filed with the Idaho State Reclamation Commission by the Twin Falls Extension Co. to construct a dam in the Snake River Canyon at an estimated cost of \$12,000,000 for irrigation, power development, and domestic purposes in Elmore, Twin Falls, Ada and Owyhee counties, Idaho. Another application has been filed for permit to construct 100,000 HP hydro-electric plant at the Ticesha site on the Snake River at an estimated cost of \$2,500,000.



**...BOSTON...**

**... Foundries booking substantial business for rest of year.**

**B**OSTON, Aug. 17.—Almost no pig iron was sold the past week, but an increasing number of consumers signified intentions of buying either late this or early next month. Foundries are booking sizable casting orders, with deliveries running from September through the remainder of the year. Indications are that castings production the last quarter will exceed that for any three-month period this year. A foreign country is inquiring for several hundred tons of iron for immediate shipment. A 3000-ton lot has left here for Wales.

Both the Bethlehem Steel Co.'s Quincy, Mass., yards and the Bath Iron Works, Bath, Me., have enough business booked to insure current operations for many months. The Maine yards are largely occupied on Government work. The Quincy yards have more than \$40,000,000 of business on books, employ about 3500, and have tentative plans for increasing the force to between 4000 and 5000.

An electric power and steam heating plant, the equivalent of six stories in height is to be erected by the City of Lansing, Mich., at an estimated cost of \$2,750,000, including buildings and equipment. Bowd & Munson are architects working under Claude Erickson, Lansing engineer.





## CHICAGO

*... Ingot output gains a half point to 86%.*

• • •

*... New sales and specifications for steel gain slightly.*

• • •

*... Pig iron prices reaffirmed for fourth quarter.*

CHICAGO, Aug. 17.—Ingot production this week has increased one-half point to 86 per cent of capacity, duplicating the highest rate attained in the recovery period prior to the strikes.

The step-up of output to this rate has some earmarks of a move to build up mill stocks of semi-finished steel, which it has been generally understood had dropped to smaller levels than normal.

Specifications as well as new sales in the past week are generally reported to have increased, but only to a minor extent, the volume of both being close to the average for the last three weeks or so. Incoming business is still running well behind shipments, although a leading producer in the district reports that the two came about even last week.

Tractor and farm implement manufacturers continue to be the heaviest consumers. Purchases by the automobile industry are increasing, but as yet have not reached large proportions, the buying so far being largely for production of parts requiring a longer-than-average manufacturing process. The industry is expected to start ordering heavy tonnage around the end of August.

Uncertainty over pig iron prices for the fourth quarter was removed this week with announcement by a leading merchant seller that fourth quarter books had been opened with no change in quotations. The action did not remove the possibility of an adjustment between now and the close of the year, this seller pointed out. Other iron sellers are expected to follow with similar announcements.

The scrap market in the district

continues extremely quiet, with no mill purchases reported. The nominal quotation for No. 1 steel is unchanged at \$19.50 to \$20.

### **Pig Iron**

A leading merchant iron seller in the district this week opened fourth quarter books with no change in prices. The action, however, did not close the way for an adjustment before the period is closed, it was pointed out. Other sellers are expected to follow in line. Shipments of pig iron and foundry coke have shown some further improvement in the last week, but the rate of gain has leveled off somewhat. As foundries casting automobile parts are expected to get active soon, the improvement may be more pronounced from now on. Tractor and farm implement makers and machine tool manufacturers continue to consume heavy tonnages.

### **Wire Products**

The outlook for wire products is reported as exceptionably favorable, particularly the prospective demand from agricultural areas, where favorable crops are counted on to enhance materially the purchasing power of the farmer. Reflecting this improvement in the farm regions, dealers report collections have shown a marked betterment this year. Jobbers are expected shortly to begin replenishment of their stocks, which are understood to be only large enough to carry them into the start of the active fall season. Substantial orders for wire rope are reported from the oil country for use in drilling operations. Resumption of heavy buying by the automobile industry is not expected until about

the end of August. Deliveries on most standard wire products run from two to three weeks.

### **Sheets and Strip**

Buying by the automobile industry has yet to reach substantial proportions, the general expectation being that large scale purchasing by this leading consumer will not materialize until about the end of the month. Deliveries on hot rolled range from six to eight weeks in most cases, on hot rolled annealed from 10 to 12 weeks and on cold reduced from four to six weeks. One strip mill is able to make practically prompt shipment.

### **Plates**

Deliveries on plates continue easier with no sizable demand from freight car builders or structural fabricators to bolster backlogs, which have been worked down steadily in the last several weeks. Promises range to 10 weeks, but mills are able to run some tonnages into schedules in about half this time when the pressure for delivery is urgent. No new car awards were reported in this district last week.

### **Bars**

Tractor and farm implement manufacturers continue the most active consumers of bar steel, as mill operators await releases from the automobile industry. Machine tool makers are also taking heavy tonnages of cold drawn bars for their active production schedules. Deliveries range from two to six weeks, depending on sizes and mills. A leading producer of alloy steel bars in the district is promising delivery in three to four weeks.

### **Structural Shapes**

Little in the way of structural steel inquiries or awards was reported in this district last week, the outstanding inquiry being 600 tons for bridge work at Helena, Mont. The remaining inquiries as well as awards involved only small lots.

### **Reinforcing Steel**

No sign of renewed activity in the reinforcing steel market has appeared. Concrete Steel Co. was awarded 500 tons for the General Foods Corp. building in Kankakee, Ill. New inquiries involve only small lots, those of more than 100 tons being 103 tons for addition to a building of Golden Rod Ice Cream Co. in Chicago; 140 tons for a bridge in Illinois and 123 tons for a bridge in Indiana. Four smaller lots for bridges in the two states accounted for 127 tons.



### ...Pig iron prices reaffirmed; foundry melt sustained.

**S**T. LOUIS, Aug. 17.—Pig iron prices have been reaffirmed for the fourth quarter. However, there was a feeling among some melters that there would be an advance in prices, with the result that there was quite a bit of buying early last week. The melt in the district is well sustained. The open-hearth situation is improved, the stove plants are going at a better rate, and the jobbing foundries report an improvement in business. And, of course, peak production prevails in the agricultural implement lines.

Fabricators of structural steel are operating at an average of 75 per cent of capacity, operations being stepped up to take care of the backlogs that had accumulated while the plants were closed on account of strikes. The fabricators are said to have sufficient business booked to operate at the present rate for the next two months. No sizable projects are pending. Buying of finished steel during the week was only fair.

### Industrial Relations At Silver Bay

**P**PROMOTING constructive relations in industry is to be the theme of the 20th Annual Conference on Industrial Relations to be held at Silver Bay on Lake George, N. Y., Aug. 25 to 28. Among the speakers will be Edward F. McGrady, Assistant Secretary of Labor, who will talk on "Government and Industrial Relations." A paper on "Experiences in Collective Bargaining" by B. C. Heacock, president of the Caterpillar Tractor Co., is to be read by L. B. Neumiller, Caterpillar's director of industrial relations. James W. Hook, president of the Geometric Tool Co. and of the New England Council, is also on the program.

The opening session will be addressed by Roy V. Wright, editor, *Railway Age*, and chairman of the conference committee. Frank Rising, labor editor of *Business Week*, will discuss collective bargaining, as will Adam Wilkinson, labor

commissioner, Western Massachusetts Paper Industries. "Industry's Responsibility in Maintaining a Democracy" is the title of an address by Ernest G. Draper, Assistant Secretary of Commerce, Washington.

Sectional conferences will be devoted to wage incentives, wage and hour legislation, and an exchange of foremen's experiences. J. M. Groves, 347 Madison Avenue, New York, is executive secretary of the conference committee.

### Canadian Properties Sold by U. S. Steel

**T**HE United States Steel Corp. has confirmed the sale to Dominion Steel & Coal Co. of its following subsidiaries located in Canada, namely, Canadian Bridge Co., Ltd., Canadian Steel Corp., Ltd., Canadian Steel Lands, Ltd., and the Essex Terminal Railway Co. The consideration received is payable in part in cash and in part in mortgage bonds and collateral debentures to be issued by Canadian Bridge Co., both issues carrying privilege for conversion into Dominion common class B stock. The transfer of the properties to the new owners is to be made on Sept. 1.

"These properties for their satisfactory operation are dependent upon their supply of semi-finished steel from other manufacturers, and to supply such steel from the United States is not conducive, because of Canadian import duty handicaps, to acceptable results," the corporation's statement says.

### Larger Hard-Facing Booklet

**M**ORE than 500 applications of hard facing are described in a new 104-page edition of "Hard-Facing with Haynes Stellite Products," a booklet issued by the Haynes Stellite Co., Kokomo, Ind., a unit of Union Carbide & Carbon Corp. This new edition is the fourth printing in about three years.

New sections present information concerning special Haynes Stellite J-Metal cutting tools and the corrosion-resistant Hastelloy alloys. A number of examples of hard-facing automotive and aircraft valves and valve seat inserts, and the use of Haynes Stellite trim for high-temperature, high-pressure steam valves, are now also described in detail.



### ...Business shows some improvement; outlook for fall good.

**T**ORONTO, Aug. 16.—As the vacation period draws to a close business in the iron and steel markets tends to show improvement. While sales for the past week or two were confined to small spot lots, prospects are bright for an active fall market.

A couple of new hydro-electric projects have been announced for which several thousands of tons of steel will be required as well as necessary equipment. The Ontario Government will erect a hydro plant at the mouth of the Montreal River at a cost of \$1,000,000. More activity is reported in the building trades and there has been a better demand for structural steel recently as well as reinforcing bars. Two large buildings are to be erected in Toronto soon which will call for between 3000 and 5000 tons of steel.

Steel prices remain unchanged for the present, but some interests look for revised lists in the early fall.

Demand for merchant pig iron is increasing. Local blast furnace representatives look for heavier demand for iron during the last quarter, but state that business so far this year has exceeded that of any year since 1929.

Demand for steel and iron scrap is steady and dealers are filling most orders out of stock. New offerings are limited. Local dealers state that they can dispose of all the heavy melting steel and machinery cast they can obtain.

### Japan to Obtain Ore From French Island

**T**HE French authorities on the island of New Caledonia, in the Pacific, have agreed in principle to the establishment of a Japanese concern to exploit an iron mine owned by a French commercial group on the island. Deposits in this mine have been estimated at 20,000,000 tons of iron ore.

The Japanese Steel Tube Co. will, it is stated, subscribe a share of the capital for the company that is to be formed to exploit the mine.





## .. PHILADELPHIA ..

*... Turning point seen as new buying begins to pick up.*

o o o

*... Delivery promises as low as two weeks on plates.*

o o o

*... Operating rate unchanged at 70 per cent of capacity.*

**P**HILADELPHIA, Aug. 17.—Eastern Pennsylvania mills and Philadelphia district sales offices reported a slight but noticeable pick-up in new orders in the past week, indicating that the summer doldrums in sales are at an end. A substantial order for auto body sheets was placed by the Budd company, and the Pennsylvania Railroad entered the market for several hundred tons of plates, after it had been concluded that this road had committed itself for all of its 1937 steel requirements. Buyers in general are in an optimistic frame of mind and the prospects look bright, particularly in the shipbuilding industry.

Structural awards continue at a low level, and a sizable store job has been converted into reinforced concrete, creating the only substantial project in that line in many weeks.

Alan Wood has returned one open hearth to operation, but Lukens has taken a furnace off, leaving the district operating rate unchanged at 70 per cent of capacity.

### ***Sheets and Strip***

With the exception of a substantial tonnage of auto body sheets placed by the Budd company, sheet business remains light and spotty, but it is felt that this automotive buying heralds an upswing from the summer slump that has prevailed in the past month. Jobbing business in sheets is off somewhat and no reaction in the way of protection orders has been forthcoming since the announcement of the new set-up on galvanized sheets. Jobbers' stocks are low, however, and the chief factor that has delayed replenishment of stocks is the easier delivery situation. Strip is moving in fair volume, particularly to radio manufacturers, who have recently announced their 1938 models and who will shortly be building up finished product in-

ventories in preparation for the Christmas trade.

### ***Pig Iron***

While no fourth quarter prices have yet been named by eastern Pennsylvania furnaces, it is expected that prices will be reaffirmed in line with recent announcements by midwestern and southern furnaces. Practically no change is noted in the general situation. New orders are for a few hundred tons for shipment in the latter part of September, and shipments on contracts and old orders continue to go forward without any signs of a holdup, although the foundry melt is somewhat lighter. Jobbing foundries are still operating on a five-day week, however. With the price situation clarified, fairly substantial commitments are expected as shortages of certain grades at the furnaces tend to make foundries carry higher inventories than they have in the past.

### ***Plates and Shapes***

Structural awards continue in small volume. The largest letting of the week was by the Pennsylvania Railroad for engine facilities at Harrisburg, calling for 300 tons. The General Motors, Trenton, N. J., plant, involving close to 5000 tons has yet to be awarded. Another project in the offing but not yet out for bids is a coal tippie for the Glen Alden Coal Co., amounting to 1200 or more tons.

Estimating departments of plate makers are busy figuring several Navy jobs that should be placed soon, including two submarines for the Portsmouth Yard, calling for 1000 tons of plates each, and eight destroyers. Bath Iron Works and Bethlehem Shipbuilding Co. are to build two each, and the Navy four in its own yards. None of the steel for any of these boats has yet been awarded. Recent business from shipyards has been very light

in recent weeks, however. Miscellaneous business in plates has picked up in the past week. Boiler and tank makers have been the chief source of orders for plates in recent weeks, with the exception of fabricators of basement storage tanks and range boilers. Mill backlogs have been steadily reduced so that many suppliers are able to quote delivery within two weeks on narrow plates. Promises on wide plates run around eight to nine weeks, down from 22 weeks in the late spring. Little further improvement can be expected as backlogs begin to build up again.

### ***Reinforcing Bars***

An unexpected switch in construction plans from structural steel to reinforced concrete on the Lit Brothers Co. store building in Philadelphia has produced the first bright spot in the market for reinforcing bars that has been seen for weeks. About 600 tons is involved. Warehouse business continues light, although some mills still find it difficult to meet delivery promises on old orders. Prices seem fairly firm.

### ***Imports***

The following iron and steel imports were received here during the past week: 3434 tons of chrome ore from Cuba; 4 tons of steel billets, 160 tons of steel bars, 30 tons of wire rods, 80 tons of steel tubes and 109 tons of steel forgings from Sweden.



## ... CINCINNATI ...

*... Sheet orders increase; pig iron prices unchanged for fourth quarter.*

**C**INCINNATI, Aug. 16.—A general revival of sheet steel ordering increased new business to about 80 per cent of capacity the past week. This was particularly encouraging, since the automobile companies are not yet in the market for substantial tonnages. Mills are maintaining capacity operation in practically all units.

Steel ingot output is stationary at about 91 per cent. Thirty-one open hearths out of 34 are being operated.

Hope of pig iron interests for a

price stimulus in a lagging market faded the past week, with affirmation of present prices for fourth quarter. Sales are at low ebb, with Southern interests reporting business almost absent. Foundries are easing the melt perceptibly in all lines except in agricultural implements, where anticipation of heavy

crops is maintaining better than market average business. Automobile and machine tool melters have reduced working forces to a level commensurate with the melt. The new furnace of the Hamilton Coke & Iron Co. will be lighted this week. Operation of this unit brings output of this company to about

1200 tons a day, approximately half of which is merchant iron. Backlogs, built up in anticipation of the operation of this unit, are large.

The coke market is quiet. A lighter melt is reflected by sharp decline in specifications against contracts.

## Production of Finished and Semi-Finished Steel in the Second Quarter

**P**RODUCTION of finished and semi-finished steel products for sale in the second quarter of 1937 totaled 11,149,030 gross tons, a slight loss from the 11,347,300 tons produced in the first quarter. Details of output by products in the second quarter and in the first half will be found in the accompanying table prepared by the American Iron and Steel Institute.

AMERICAN IRON AND STEEL INSTITUTE											
Capacity and Production for Sale of Iron and Steel Products											
Second Quarter 1937											
	Number of companies	Items	Annual Capacity Gross tons	PRODUCTION FOR SALE—GROSS TONS							
				Current Quarter				To Date (6 Mos. 1937)			
				Total	Per cent of capacity	Export	To members of the industry for conversion into further finished products	Total	Per cent of capacity	Export	To members of the industry for conversion into further finished products
Ingot, bloom, billets, slabs, sheet bars, etc.	30	1	xxxxxx	1,054,688	xxx	90,473	642,359	2,095,024	xxx	103,836	1,341,366
Heavy structural shapes	9	2	xxxxxx	810,705	68.4	57,552	-	1,517,848	64.0	65,820	xxxxxx
Steel piling	4	3	xxxxxx	264,800	49.8	1,001	-	56,009	42.3	2,481	xxxxxx
Plates—Sheared and Universal	22	4	xxxxxx	6,335,219	883,747	55.8	80,215	1,692,887	53.4	135,003	15,756
Skelp	7	5	xxxxxx	221,989	xxx	34,022	115,978	396,659	xxx	43,146	233,688
Rails—Standard (over 60 lbs.)	4	6	xxxxxx	5,575,000	448,883	50.2	8,677	864,789	48.4	10,418	xxxxxx
Light (60 lbs. and under)	6	7	xxxxxx	433,500	29,643	27.4	4,601	62,907	29.0	6,821	xxxxxx
All other (Incl. girder, guard, etc.)	2	8	xxxxxx	140,000	15,867	45.3	4,094	31,032	44.3	5,337	xxxxxx
Splice bar and tie plates	15	9	xxxxxx	1,472,195	153,333	41.7	2,435	340,232	46.2	3,087	xxxxxx
Bars—Merchant	41	10	xxxxxx	1,123,568	xxx	26,198	137,630	2,320,013	xxx	43,625	278,355
Concrete reinforcing	29	11	xxxxxx	255,043	xxx	9,572	-	450,182	xxx	16,350	xxxxxx
Cold finished—Carbon	18	12	xxxxxx	185,883	xxx	1,430	-	390,700	xxx	2,738	xxxxxx
Alloy—Hot rolled	16	13	xxxxxx	183,578	xxx	3,448	17,413	389,806	xxx	5,145	32,428
—Cold finished	13	14	xxxxxx	21,612	xxx	144	-	44,215	xxx	660	xxxxxx
Hoops and baling bands	4	15	xxxxxx	26,533	xxx	235	-	48,179	xxx	349	xxxxxx
<b>TOTAL BARS</b>	60	16	xxxxxx	11,651,851	1,796,217	61.7	41,027	3,643,095	62.5	68,867	310,783
Tool steel bars (rolled and forged)	17	17	xxxxxx	106,092	13,802	52.0	44	26,999	50.9	90	xxxxxx
Pipe and tube—B. W.	16	18	xxxxxx	1,810,472	234,755	51.9	9,604	490,641	54.2	16,598	xxxxxx
L. W.	11	19	xxxxxx	1,464,899	202,496	55.3	8,579	408,442	55.8	13,245	xxxxxx
Electric weld	3	20	xxxxxx	566,107	46,483	31.7	17	106,607	36.4	382	xxxxxx
Seamless	15	21	xxxxxx	2,772,828	435,945	62.9	21,863	873,073	63.0	44,877	xxxxxx
Conduit	7	22	xxxxxx	155,270	20,063	51.7	746	45,132	58.1	1,400	xxxxxx
Mechanical Tubing	5	23	xxxxxx	188,800	34,920	74.0	1,456	69,283	73.4	2,763	xxxxxx
Wire rods	19	24	xxxxxx	200,961	xxx	10,654	71,158	412,334	xxx	21,538	143,036
Wire—Drawn	38	25	xxxxxx	1,869,827	336,173	71.2	16,743	709,979	74.7	31,973	15,927
Nails and staples	19	26	xxxxxx	1,123,793	148,394	52.8	7,714	320,651	57.1	14,264	xxxxxx
Barbed wire and fence	17	27	xxxxxx	1,181,008	122,024	41.5	9,811	254,738	43.1	19,958	xxxxxx
Bale ties	11	28	xxxxxx	114,677	18,977	66.2	95	31,389	54.7	153	xxxxxx
All other wire products	5	29	xxxxxx	31,000	1,571	20.3	1	4,110	26.5	1	xxxxxx
Fence posts	14	30	xxxxxx	146,800	17,605	48.0	274	39,501	53.8	593	xxxxxx
Black plate	12	31	xxxxxx	572,229	104,699	73.2	3,182	207,354	72.5	5,837	54,702
Tin plate	14	32	xxxxxx	2,921,812	673,792	92.2	100,762	1,253,970	85.8	187,110	xxxxxx
Sheets—Hot rolled	19	33	xxxxxx	574,250	xxx	24,506	14,074	1,153,889	xxx	36,742	31,421
Hot rolled annealed	21	34	xxxxxx	321,181	xxx	22,297	512	1,092,929	xxx	40,752	1,018
Galvanized	16	35	xxxxxx	331,499	xxx	20,325	-	665,557	xxx	37,555	xxxxxx
Cold rolled	19	36	xxxxxx	570,140	xxx	27,128	-	1,172,275	xxx	45,633	xxxxxx
All other	16	37	xxxxxx	161,500	xxx	3,584	-	326,866	xxx	7,180	xxxxxx
<b>TOTAL SHEETS</b>	29	38	xxxxxx	10,156,927	2,158,570	85.0	97,840	4,411,516	86.9	167,862	32,439
Strip—Hot rolled	28	39	xxxxxx	3,474,374	589,523	67.9	17,105	1,277,322	73.5	34,411	203,368
Cold rolled	39	40	xxxxxx	1,200,333	210,689	70.2	1,881	449,989	75.0	4,631	xxxxxx
Wheels (car, rolled steel)	5	41	xxxxxx	380,319	53,742	56.5	305	107,929	56.8	1,602	xxxxxx
Axles	5	42	xxxxxx	425,900	43,541	40.9	657	82,193	38.6	930	xxxxxx
Track spikes	11	43	xxxxxx	308,458	30,273	39.3	332	61,912	40.1	666	xxxxxx
All other	5	44	xxxxxx	27,907	1,969	28.2	48	4,274	30.6	100	xxxxxx
<b>TOTAL STEEL PRODUCTS</b>	150	45	xxxxxx	11,149,030	xxx	613,807	1,135,583	22,345,820	xxx	1,015,800	2,548,663
Estimated total steel finishing capacity based on a yield from ingots of 70.9% - 46 47,401,500 xxxxxx 84.5 xxxxx xxxxxx xxxxxx 84.4 xxxxxx xxxxxx											
Pig iron, ferro manganese and spiegel	31	47	xxxxxx	1,595,905	xxx	112,704	484,689	3,251,907	xxx	152,158	967,546
Ingot moulds	4	48	xxxxxx	93,209	xxx	1,067	-	216,258	xxx	2,574	xxxxxx
Bars	13	49	xxxxxx	237,019	18,804	31.7	25	38,803	32.7	131	548
Pipe and tubes	4	50	xxxxxx	185,457	13,778	29.7	145	32,501	35.0	361	xxxxxx
All other	4	51	xxxxxx	113,660	4,398	15.5	743	12,058	21.2	1,643	1,589
<b>TOTAL IRON PRODUCTS (ITEMS 49 TO 51)</b>	16	52	xxxxxx	478,176	36,980	30.9	913	1,124	34.9	2,135	2,137

Total companies included 174  
Adjustments have been made by several companies in their annual capacity and production to date figures for certain classes of products.

Total steel products produced for sale, less shipments to members of the industry for conversion into further finished products: Current quarter 10,013,647 G.T.: 84.5 % of Finishing Capacity.  
To date 19,997,155 G.T.: 84.4 % of Finishing Capacity.  
The above tonnages represent 70.9 % of the ingots produced by companies whose products are included above.





## ... CLEVELAND ...

*... Moderate improvement in new business may indicate end of summer slump.*

*... Ingot output down three points at Youngstown; unchanged Cleveland-Lorain.*

*... Pig iron prices reaffirmed; steel scrap sells at \$22.50, Youngstown.*

CLEVELAND, Aug. 17.—A slight gain in new business in finished steel is reported by some sales offices, indicating that perhaps the low point in the seasonal slump has been passed. However, others as yet notice no improvement over the early part of the month. The moderate gain in orders has resulted from depletion of stocks of miscellaneous consumers and a little improvement in bookings from automobile manufacturers and parts makers. The improvement is more noticeable in sheets than in other products.

Ingot output in the Cleveland-Lorain district is unchanged this week at 81 per cent of capacity. In the Youngstown district it is down three points to 82 per cent of capacity. Finishing mill operations generally have not been curtailed, and backlogs have been reduced to the extent that some mills now need new tonnage, particularly for hot rolled strip. Sheet deliveries are from three to four weeks on cold rolled material, up to eight weeks on light hot rolled and galvanized. Agricultural implement manufacturers have placed some steel for their 1938 production, and demand continues good from builders of power shovels and cranes.

There is no evidence that some of the present steel production is going into mill inventories. The railroad field remains quiet. However, there is an expectation that the Chesapeake & Ohio will come into the market in September for a sizable lot of rails.

Present pig iron prices have been reestablished for the fourth quarter by Lake furnaces and on Alabama iron. Departing from the practice followed since the code days, furnaces, instead of waiting until Sept. 1 to name prices and start selling for the last quarter,

have opened their books for that delivery so that buyers in need of iron can now place tonnage for the remainder of the year instead of limiting purchases of iron to be shipped before Sept. 30.

A leading steel maker on Aug. 13 announced the reestablishment of the present price on stainless steel for the last quarter.

Scrap in the valley district has been established at higher levels by the sale of 25,000 tons to a Youngstown consumer, which paid \$22.50 for No. 1 heavy melting steel.

### **Bars, Plates and Shapes**

While bar business continues light, miscellaneous demand shows a little improvement. Some new business is coming from forge shops and other consumers whose stocks are running low. The Bethlehem Steel Co. has been awarded 590 tons of structural shapes for the Lorain Avenue grade crossing elimination job in Cleveland and an extension for the City Auto Stamping Co., Toledo, requiring 200 tons has been taken by the Whitehead & Kales Co., Detroit. Machinery frames for the new plant of the Industrial Rayon Corp. in Painesville, Ohio, requiring 1000 tons or more of structural shapes, have been awarded to the American Bridge Co. For the same plant the Bethlehem Steel Co. has been awarded 4070 ft. of 48-in. fabricated steel pipe requiring 600 tons of plates. New structural inquiries are light and confined to small lots. The same statement applies to reinforcing bars.

### **Pig Iron**

Present prices have been reestablished for the fourth quarter by leading Lake furnace interests on all Northern grades. Southern iron prices also have been re-

affirmed for the coming quarter. Extended prices are \$24 for foundry iron and also on malleable iron, except at Buffalo and Erie, where \$24.50 prevails, and \$23.50 on basic iron. Though steel prices for the last quarter were reestablished several weeks ago, there was considerable talk of an advance on pig iron, mostly in the East. As some consumers wanted to know what pig iron is to cost them during the last quarter, producers decided to remove the uncertainty by naming quotations now rather than wait until Sept. 1. Sales improved the past week, during which a fair amount of business in lots up to 2000 tons were placed by motor car, agricultural implement, machinery and heating equipment foundries.

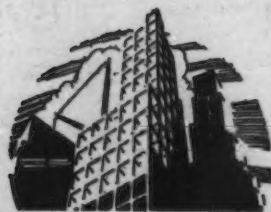
### **Sheets and Strip**

New demand shows an improvement over recent weeks. The automotive industry has started to order a little more freely and has released specifications against some orders placed a few weeks ago, shipments against which were held up, evidently because of delays in getting under production on new models. Some of the suspended tonnage, however, has not been released. Business from Ohio stamping plants making automobile parts shows some increase and a gain is reported in orders from miscellaneous consumers. Some makers of refrigerators are ordering sheets for new models.

Some automobile parts makers are starting to buy small lots of strip and a more active demand from this source is looked for during the next week or two. Miscellaneous demand is fair.

### **Iron Ore**

Lake Erie ports received 7,555,232 tons of ore during July as compared with 5,063,950 tons during the same month last year. Receipts at these ports for the season until Aug. 1 were 23,641,720 tons, a gain of 11,235,159 tons over the same period last year. Shipments from Lake Erie ports last month were 5,495,185 tons against 3,829,688 tons during July last year, and for the season 17,464,489 tons, an increase of 7,303,309 tons over the same period last year ago. Total receipts at all lower Lake ports up to Aug. 1 were 33,062,707 tons. Nearly all ore that is being shipped by water is going direct to furnaces, as is indicated by a reduction in the amount of ore on docks in spite of the very heavy movement this season. The dock balance on Lake Erie ports Aug. 1 was 3,851,416 tons or 165,197 tons less than on the same date last year.



## ... NEW YORK ...

*... Moderately better tone prevails, though tonnage gains are slight.*

*... Mills in need of orders for some products.*

*... Heavy pressure for tin plate; all grades of sheets more active.*

**N**EW YORK, Aug. 17.—A moderately better tone prevails in the local steel market, although the volume of improvement as reckoned in tonnage still leaves much to be desired. Mills are getting into the position of actually needing orders for some products, while in others their backlogs extend for many weeks. Tin plate remains the outstanding product so far as demand and consumption are concerned, there being no let-up in the pressure upon mills for shipments to can companies.

Inquiries for plates have shown a slight pickup in the past week,

and the prospects for new business are better than they have been for some weeks. This renewed activity is coming from general industrial concerns. Railroad buying is still absent and tank fabrication is slow. Old orders are still being held up for shipment to struck shipyards, but an early settlement of the labor difficulties that have beset the local repair yards for past two months seems near. Refinery equipment fabricators are working into their large backlogs and have made no recent commitments for plates. Lack of new business is said to have resulted in reduction in engineering personnel, but there is a

possibility that equipment for some West Coast refineries may be fabricated in the East and will benefit Eastern mills. Deliveries are quite prompt, being as low as two weeks on all but the widest plates.

All sheet lines seem more active, and new business is coming from both jobbers and fabricators. Shipment is being asked as soon as possible, indicating that manufacturers' stocks are not high. Delivery promises are unchanged, three to four weeks being usual for cold reduced sheets.

### Pig Iron

Buying continues listless with occasional sales of small lots for prompt delivery breaking the monotony of the summer doldrums. Foundry order books are at the season's low point. Announcements by several furnaces that they are ready to take fourth-quarter business at third-quarter prices has apparently settled the price question for another three months and has removed the possibility of speculative buying from the market. Future buying will undoubtedly follow the normal path of actual melting operations. It is understood that some furnaces are accepting fourth-quarter business only with the understanding that the iron will be taken before the end of the year. A moderate amount of export iron was purchased during the week, and a fair tonnage still remains out in inquiries. Notable in the export field is the number of low phosphorus inquiries circulating at the present time. These proposals aggregate about 10,000 tons.



## REINFORCING STEEL

*... Awards of 11,050 tons—3800 tons in new projects.*

### AWARDS

Cambridge, Mass., 475 tons, School of Architecture, Massachusetts Institute of Technology, Concrete Steel Co., New York.

Newington, Conn., 170 tons, bridge, to Truscon Steel Co., Youngstown.

Windham, Conn., 150 tons, bridge, to Concrete Steel Co.

Willimantic, Conn., 148 tons, overpass, to Concrete Steel Co.

Brooklyn, 500 tons, American Safety Razor factory, to Bethlehem Steel Co., Bethlehem, Pa.

Hempstead, L. I., 450 tons, sewer, to Carroll-McCreary, Inc., Brooklyn, N. Y.

Queens, N. Y., 3000 tons, sewers, two contracts, to Igoe Brothers, Newark, N. J.

Carderock, Md., 3000 tons, model testing basin, to Bethlehem Steel Co., through Turner Construction Co.

Whiting, Ind., 625 tons, American Smelting & Refining Co. plant, to Jos. T. Ryerson & Son, Inc., Chicago.

Chicago, 450 tons, Albert Schwill grain elevator, to Calumet Steel Co., Chicago.

Chicago, 235 tons, East 108rd Street viaduct, to Inland Steel Co., Chicago.

Mt. Pleasant, Iowa, 225 tons, hospital, to Sheffield Steel Co., Kansas City.

Kankakee, Ill., 500 tons, building, General Foods Co., to Concrete Steel Co.

Tulsa, Okla., 800 tons, Will Rogers High School, to Sheffield Steel Co., Kansas City.

Burbank, Cal., 130 tons, post office, to Soule Steel Co., San Francisco.

San Francisco, 200 tons, building for Schmidt Lithograph Co., to W. C. Hauck.

### NEW REINFORCING BAR PROJECTS

Greenwich, Conn., 160 tons of mesh, State road.

Buffalo, 250 tons, flour storage building, Washburn Crosby Co.

Philadelphia, 600 tons, Lit Brothers Co. store, previously reported as 1400 tons of fabricated structural steel.

Detroit, 300 tons, Chrysler Motors.

St. Louis, 450 tons, Marine hospital.

Chicago, 103 tons, building for Golden Rod Ice Cream Co.

State of Illinois, 140 tons, bridge, Route 158, section 2B1.

Wabash County, Ind., 123 tons, bridge.

Mare Island, Cal., 775 tons, graving dock for Navy Yard. George Pollock Co., Sacramento, low bidder on general contract.

San Francisco, 390 tons, Richmond-Sunset sewage plant; bids Aug. 18.

Glenwood Springs, Colo., 114 tons, State highway bridge; bids Aug. 23.

Phoenix, Ariz., 107 tons, Salt River Reclamation project; bids Aug. 11.

Knob, Cal., 152 tons, All American Canal project; bids Aug. 16.

Cantu, Cal., 153 tons, All American Canal project; bids Aug. 20.



# June Iron and Steel Imports Remain At May Level

IMPORTS of iron and steel products (excluding scrap) into the United States during June aggregated 39,699 gross tons valued at \$2,212,086 in comparison with 39,877 tons valued at \$2,271,192 in the previous month and 40,325 tons valued at \$1,657,194 in the corresponding one of 1936, according to preliminary information released by the Metals and Minerals Division, Bureau of Foreign and Domestic Commerce.

Pig iron, totaling 7541 tons, was the outstanding product received on a tonnage basis during June, and came mostly from British India.

In the first six months of the current year, receipts (excluding scrap) aggregated 265,757 tons, valued at \$13,000,533 in comparison with 253,046 tons, valued at \$10,258,986 in the like period of 1936. During this period the outstanding products received from a tonnage standpoint were: pig iron, 49,865 tons (97,507 tons in the first six months of 1936); structural shapes, 50,379 (25,507 tons in 1936 period); merchant steel bars, 28,559 tons (18,642 tons in 1936 period), and ferromanganese, 17,252 tons in 1937 (12,017 tons in like period in 1936).

## United States Imports of Pig Iron by Countries of Origin

	June		Six Months Ended June	
	1937	1936	1937	1936
United Kingdom	50	2,554	100	3,736
British India	6,410	6,829	34,684	29,147
Germany	...	308	510	3,669
Netherlands	...	4,798	15,065	39,789
Canada	381	694	3,850	5,796
France	...	...	...	...
Belgium	...	...	...	529
Norway	100	340	475	1,598
Sweden	200	210	600	374
Russia	...	851	4,581	12,458
All others	...	208	...	409
Total	7,541	16,793	59,865	97,507

## June Imports of Iron and Manganese Ores

	June		Six Months Ended June	
	1937	1936	1937	1936
Canada	...	...	...	168
Cuba	23,000	22,000	6,519	...
Chile	122,100	132,480	94	...
Spain	...	...	...	...
Norway	25,559	15,274	...	...
Sweden	14,578	...	...	...
French Africa	...	...	...	...
Russia	...	...	13,425	18,528
India	...	...	763	3,492
Brazil	...	...	3,679	...
Gold Coast	...	...	8,657	6,994
Other	...	...	...	...
Countries	12,896	271	...	19
Total	198,135	170,025	33,137	29,201

Imports (In Gross Tons)	June		Six Months Ended June	
	1937	1936	1937	1936
Pig iron	7,541	16,793	59,865	97,507
Sponge iron	371	...	2,128	1,128
Ferromanganese	3,418	2,222	17,252	12,017
Spiegeleisen	2,375	5,285	9,012	17,374
Ferrochrome	15	2	216	3
Ferrosilicon	586	22	1,285	397
Other ferroalloys	...	150	52	151
Scrap	5,072	19,587	32,757	66,099
Pig iron, ferroalloys and scrap	19,378	44,061	122,567	194,676
Steel ingots, blooms, etc.	...	...	124	61
Billets, whether solid or hollow	215	79	1,089	389
Wire rods	1,044	1,278	8,319	9,770
Semi-finished steel	1,259	1,357	9,532	10,220
Concrete reinforcement bars	40	501	3,450	1,709
Hollow steel bars	230	162	1,375	1,008
Merchant steel bars	3,635	2,111	28,559	18,642
Iron slabs	...	...	1	...
Iron bars	233	168	1,159	658
Boiler and other plate	23	...	199	52
Sheets, skelp and saw plate	684	1,420	7,855	10,527
Die blocks or blanks, etc.	18	2	73	91
Tin plate	47	8	152	135
Structural shapes	7,370	3,157	50,379	25,427
Sheet piling	694	182	1,762	1,046
Rails and track material	1,664	573	5,371	3,546
Welded pipe	855	531	5,659	2,757
Other pipe	2,008	1,526	14,546	8,689
Cotton ties	...	...	349	88
Other hoops and bands	2,674	979	15,627	10,916
Barbed wire	580	557	7,090	9,219
Round iron and steel wire	308	420	2,746	2,336
Telegraph and telephone wire	2	1	10	33
Flat wire and steel strips	350	274	1,855	1,478
Wire rope and strand	397	183	1,857	1,229
Other wire	734	64	2,381	703
Nails, tacks and staples	810	1,479	9,521	12,803
Bolts, nuts and rivets	18	16	264	235
Horse and mule shoes	23	44	157	211
Rolled and finished steel	23,397	14,358	162,397	113,548
Malleable iron pipe fittings	37	...	242	20
Cast iron pipe and fittings	399	17	1,505	126
Castings and forgings	301	117	2,271	555
Total	44,771	59,910	298,514	319,145

Exports (In Gross Tons)	June		Six Months Ended June	
	1937	1936	1937	1936
Pig iron	105,194	91	305,851	924
Ferromanganese and spiegeleisen	104	16	1,336*	226
Other ferroalloys	279	75	1,169*	1,041
Scrap, iron and steel	514,651	186,756	2,134,765*	1,045,426
Scrap, tin plate	2,905	...	16,165	8,825
Waste-waste tin plate	2,741	4,417	16,730	17,777
Pig iron, ferroalloys and scrap	625,874	191,255	2,481,216*	1,074,219
Ingots, blooms, billets, sheet bars	17,009	1,682	58,860*	6,883
Ingots, etc., alloy steel incl. stainless	2,614	...	3,861	...
Skelp	3,396	6,017	39,333	18,362
Wire rod	3,968	3,317	24,364	20,931
Semi-finished steel	31,987	17,016	187,018	46,176
Bars, plain and reinforcing	12,081	3,316	57,822	25,777
Bars, alloy steel	531	...	3,437	...
Bars, stainless steel	68	...	149	...
Iron bars	130	107	1,278	656
Plates, plain and fabricated	33,349	4,874	139,224	31,632
Plates, alloy steel	17	...	2,180	...
Plates, stainless	5	...	21	...
Sheets, galvanized steel	7,001	4,654	34,095	29,420
Sheets, galvanized iron	158	111	2,730	682
Sheets, black, plain steel	24,380	10,771	120,892	65,787
Sheets, alloy steel	566	...	1,805	...
Sheets, stainless	83	...	348	...
Sheets, black iron	1,990	798	5,595	3,895
Hoops, bands, strips, plain steel	10,034	6,002	59,805	29,385
Hoops, bands, strip steel, alloy	248	...	768	...
Hoops, bands, strip steel, stainless	18	...	297	...
Tin plate (including long terne)	23,207	26,596	149,658	131,706
Terne plate (including long terne)	290	631	3,065	2,100
Structural shapes, plain material	11,623	6,057	59,704	25,573
Structural material, fabricated	3,035	1,410	17,210	9,703
Sheet piling	101	263	2,151	1,540
Tanks, steel	2,772	1,669	14,680	12,768
Steel rails	7,026	8,110	54,297	34,057
Rail fastenings, switches, spikes, etc.	1,202	1,209	8,308	5,741
Boiler tubes	1,078	380	6,337	2,948
Casing and oil line pipe	5,938	2,242	46,296	10,930
Pipe, black and galv., welded steel	3,354	1,280	20,089	9,326
Pipe, black and galv., welded iron	235	388	3,964	1,740
Plain and galvanized wire	4,691	4,069	28,440	22,628
Barbed wire and woven wire products	3,152	2,281	21,666	16,451
Wire rope and other products	1,900	630	7,876	4,032
Nails and tacks	2,257	683	13,380	5,638
Bolts, nuts, rivets and washers except track	1,019	493	5,940	3,124
Other finished steel	260	263	1,598	1,080
Rolled and finished steel	163,689	89,287	895,105	487,325
Cast iron pipe and fittings	1,846	1,154	18,047	6,860
Malleable iron screwed fittings	406	310	2,494	1,634
Car wheels and axles	1,446	558	8,123	2,886
Castings, iron and steel	626	1,031	6,554	5,246
Castings, alloy steel, incl. stainless	92	...	832	...
Forgings, plain	532	240	3,080	2,319
Forgings, alloy steel, incl. stainless	36	...	424	...
Castings and forgings	4,384	3,293	39,554	18,945
Total	826,534	294,951	3,542,693	1,626,665

\* Manganese content. \* Chrome content. \* Silicon content. \* Alloy content.  
\* Revised cumulative totals, May figures revised by Department of Commerce.



# ...NON-FERROUS...

... Copper deliveries in July reach year's low point.

... Lead demand tapers; price unchanged.

... Malayan drought reports cause active tin buying.

**N**EW YORK, Aug. 17.—July copper deliveries of 72,890 tons, the lowest of any month this year to date, were 10,691 tons below the June total of 83,581 tons. Production in July amounted to 79,611 tons, compared with 86,016 tons in June. Domestic

refined stocks increased 6721 tons, while blister rose 5958 tons, making the total advance in world stocks 12,679 tons. The decline of the export price in the week from an earlier level of 14.90c. to 14.20c. per lb., c.i.f., usual Continental base ports has had the effect of

temporarily quieting the fears of a price advance in the domestic market. Sales are slightly below the level established a week ago, but are still in good volume at the firm and unchanged price basis of 14c. per lb., Connecticut Valley, for the electrolytic grade.

## Lead

While new business continues in good form, it does not compare with the unusual volume of sales of the previous week. Some estimates put it as much as 50 per cent less. If the present buying trend is maintained throughout the month, and every indication suggests that it will be, the August total should be around 45,000 tons, or slightly better than June. Inasmuch as some sellers are reluctant to book October positions, September buying dominates the market. Requirements for that month are 80 per cent covered. The Far East uncertainties have weakened the London Exchange considerably, and very little consumer interest is evident, even at the present level of 5c. per lb., a decline of 0.18c. from the previous week's price position. Domestic quotations are unchanged at 6.50c. per lb., New York.

## Zinc

The business of requisitioning available supplies of spelter on a basis of past consumption has become routine work with sellers, and outside of the fact that all producers have accepted 7.60c. per lb., New York, as the price basis, the position of the market is unchanged from the preceding week. Sales of prime Western for the week were 10,340 tons, and deliveries totaled 4876 tons. Undelivered stocks continue to expand and at present stand at 99,875 tons. Spelter in London this morning was quoted at 5.40c. per lb., as against 5.67c. a week ago.

## Tin

Reports that the drought in Malaya would have an adverse effect on the production of that district led to an abnormal buying wave on Thursday, with all types of consumers actively seeking early coverage at 60c. per lb., New York. However, supplementary reports on Friday, minimizing the extent of the drought, had the tendency to quiet the market down to more normal levels, where it has since remained. Straits tin in New York today is quoted at 59.75c. per lb., a decline of 0.375c. from the quotations of a week ago. Prices abroad have been gradually lowered, and today, on first call in London, Straits metal was quoted at £266 15s for prompt delivery, and £264 15s for future.

### The Week's Prices. Cents Per Pound for Early Delivery

	Aug. 11	Aug. 12	Aug. 13	Aug. 14	Aug. 16	Aug. 17
Electrolytic copper, Conn.*	14.00	14.00	14.00	14.00	14.00	14.00
Lake copper, N. Y. ....	14.125	14.125	14.125	14.125	14.125	14.125
Straits tin, spot, New York	59.625	60.00	60.00	...	59.50	59.75
Zinc, East St. Louis.....	7.25	7.25	7.25	7.25	7.25	7.25
Zinc, New York .....	7.60	7.60	7.60	7.60	7.60	7.60
Lead, St. Louis .....	6.35	6.35	6.35	6.35	6.35	6.35
Lead, New York .....	6.50	6.50	6.50	6.50	6.50	6.50

\*Delivered Connecticut Valley; price ¼c. lower delivered in New York.  
Aluminum, virgin 99 per cent plus 20.00c.-21.00c. a lb., delivered.  
Aluminum No. 12 remelt No. 2 standard, in carloads, 19.00c. to 19.50c. a lb., delivered.  
Nickel, electrolytic, 35c. to 36c. a lb. base refinery, in lots of 2 tons or more.  
Antimony, Asiatic, 15.25c. a lb., prompt, f.o.b., New York.  
Quicksilver, \$93.00 to \$95.00 per flask of 76 lb.  
Brass ingots, commercial 85-5-5-5, 14.25c. a lb., less carload, delivered; in Middle West ¼c. a lb. is added on orders for less than 40,000 lb.

#### From New York Warehouse

Delivered Prices, Base per Lb.	
Tin, Straits pig ...	61.00c. to 62.00c.
Tin, bar .....	63.00c. to 64.00c.
Copper, Lake .....	15.00c. to 16.00c.
Copper, electrolytic...	15.00c. to 16.00c.
Copper, castings ...	14.75c. to 15.75c.
*Copper sheets, hot-rolled .....	21.78c.
*High brass sheets ..	19.75c.
*Seamless brass tubes .....	22.50c.
*Seamless copper tubes .....	22.625c.
*Brass rods .....	16.25c.
Zinc, slabs .....	8.75c. to 9.75c.
Zinc, sheets (No. 9), casks, 1200 lb. and over .....	13.00c.
Lead, American pig. 7.50c. to 8.50c.	
Lead, bar .....	8.50c. to 9.50c.
Lead, sheets, cut. ...	10.00c.
Antimony, Asiatic ..	16.25c. to 16.75c.
Alum., virgin, 99 per cent plus .....	22.50c. to 24.00c.
Alum., No. 1 for remelting, 98 to 99 per cent .....	19.50c. to 21.00c.
Solder, ½ and ⅓ ...	35.00c. to 36.00c.
Babbitt metal, commercial grade ...	25.00c. to 65.00c.

\*These prices, which are also for delivery from Chicago and Cleveland warehouses, are quoted with 3¼ per cent allowed off for extras, except copper tubes and brass rods, on which allowance is 40 per cent.

#### From Cleveland Warehouse

Delivered Prices per Lb.	
Tin, Straits pig .....	63.625c.

Tin, bar .....	65.625c.
Copper, Lake .....	15.00c. to 15.25c.
Copper, electro-lytic .....	15.00c. to 15.25c.
Copper, castings ...	14.75c. to 15.00c.
Zinc, slabs .....	8.75c. to 9.00c.
Lead, American pig. 7.00c. to 7.25c.	
Lead, bar .....	10.50c. to 11.00c.
Antimony, Asiatic ..	17.88c.
Babbitt metal, medium grade.	26.00c.
Babbitt metal, high grade...	67.625c.
Solder, ½ and ⅓ .....	40.00c.

#### Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible .....	10.875c.	11.625c.
Copper, hvy. and wire .....	10.25c.	10.75c.
Copper, light and bottoms .....	9.25c.	9.50c.
Brass, heavy .....	6.25c.	6.875c.
Brass, light .....	5.125c.	5.875c.
Hvy. machine composition .....	9.125c.	9.625c.
No. 1 yel. brass turnings .....	7.50c.	8.00c.
No. 1 red brass or compos. turnings	8.875c.	9.375c.
Lead, heavy .....	4.625c.	5.00c.
Cast aluminum ..	12.125c.	13.25c.
Sheet aluminum ..	13.25c.	14.75c.
Zinc .....	3.50c.	3.875c.





## ....BUFFALO....

... *Hanna blast furnace blown in, making 12 active in district.*

**B**UFFALO, Aug. 17.—Twelve blast furnaces are making iron in the Buffalo district. The 11 that were in blast were augmented by the addition of a third stack at Hanna Furnace Corp., which had been out for relining. This is the second Hanna stack to be brought back into production this summer after relining. Operations are: Bethlehem's Lackawanna plant, five; Hanna, two; Republic, two; Wickwire-Spencer Steel Co., two; Tonowanda Iron Corp., one.

Numerous inquiries have developed for fourth-quarter pig iron. A little pick-up in spot business is shown, due to the exhaustion of low-priced iron acquired by foundries during May. Producers expect a very good fourth quarter.

Bids went in yesterday on a new warehouse and service department for the International Harvester Co. to be erected in Buffalo. It will require 450 tons of fabricated structural steel. Other structural jobs in the offing are an addition to the Simon Brewing Co. plant in Buffalo and an addition to the Hammermill Paper Co. plant in Erie, Pa., each to involve about 100 tons.



## ..BIRMINGHAM..

... *Operations steady, with fair flow of new business.*

**B**IRMINGHAM, Aug. 17.—There is a fair flow of new business and operations continue steady, sustained by backlogs. All 18 blast furnaces remain active. Last week there was a slight reduction in open hearth operations, 17 being worked instead of 19, as has been the case for some time past. One was off at Ensley and another at Gadsden. This week 18 are scheduled.

Nashville Bridge Co. has booked 145 tons of structural steel for a

highway bridge between Hawkins and Sullivan counties, Tennessee.

Ingalls Iron Works is fabricating a dredging barge, which is to be shipped to South America for gold dredging operations.

Alabama Pipe Co., Anniston, has received an order for 500 tons of cast iron pipe from Milwaukee.

Tennessee Valley Authority has awarded a contract to Dravo Corp., Pittsburgh, for 42 spillway gates,

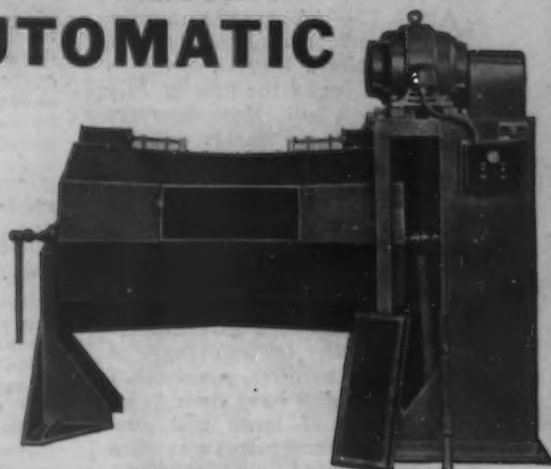
to be used at Pickwick Landing and Guntersville dams, on a bid of approximately \$913,000. Bethlehem Steel Co. was also given an order for steel to be used in bridge relocation work in the Pickwick Landing dam reservoir area.

Stone & Webster Engineering Corp. is to build the new plant of the Victor Chemical Works, recently announced for Mt. Pleasant, Tenn.

## — Burnishing — BALL SEPARATION Work and Balls Rinsed ALL AUTOMATIC



This new IDEAL Ball Return Burnishing Barrel receives a load of work that completely fills the middle section. Rotation brings the balls from the end sections. After burnishing, reversing direction of rotation causes balls to return to end sections while work and balls are rinsed, cleaned work is discharged—a complete cycle with no manual operation! Ask for detailed description of this burnishing method that improves finish, cuts cost, speeds production.



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**DUNBAR BROS. CO.**

DIVISION OF ASSOCIATED SPRING CORPORATION BRISTOL CONNECTICUT



## IRON AND STEEL SCRAP

*... Although no weakness is apparent, the upward movement in prices has been halted in important districts.*

o o o

*... Composite price remains at \$20.50.*

**A**UG. 17.—Although the market undertone continues strong, the sharp upward swing in prices that began the first of July has come to a halt. Most observers anticipate that the market will now mark time until after Labor Day. Prices for No. 1 steel remain unchanged at Pittsburgh, Chicago and Philadelphia, leaving THE IRON AGE composite figure at \$20.50, the first plateau to be reached since the low spot of \$17.08 last recorded on June 29. Considerable strength is exhibited at Youngstown, however, where No. 1 steel and bundles have risen \$1 on the strength of large mill purchases. Cleveland prices also show a strong upward trend, with the exception of the leading grade, and Cincinnati prices have been advanced on most grades, as have those at Detroit. Buffalo prices are unchanged, but the market is very strong. Absence of mill sales account for the quietness that has developed in the principal districts.

### **Pittsburgh**

With the market exhibiting no more strength or weakness than existed a week ago, activity is confined to dealers and brokers who are attempting to cover recent sales. The last sales of No. 1 steel into consumption were made at \$22 a ton. Brokers, on the other hand, are in the majority of cases paying \$22 a ton on coverages, and the amount of steel that can be bought at around \$21.50 is small. Although the undertone of the market continues strong, some sources do not look for greater activity until the next railroad lists come out around the first of the month. No. 1 steel remains quotable at \$22 a ton, flat.

### **Chicago**

The scrap market in this district continued extremely quiet last week, with no mill purchases and the nominal quotation for No. 1 heavy melting steel holding unchanged at \$19.50 to \$20. Nevertheless, the undertone still is considered strong, the absence of mill buying recently being attributed to inability to get shipments into the

mills because of congestion on their tracks, a situation that is expected to be relieved shortly. Dealers generally are reported reluctant to sell at the prevailing price. Such buying as materializes in the future is expected to come from independent mills, inasmuch as the leading consumer in the district is understood to be fully stocked for the remainder of the year.

### **Philadelphia**

For the fourth consecutive week, No. 1 heavy melting steel remains quotable at \$19.50 to \$20 in the absence of any new mill sales of any importance. Although shipments are going forward into consumption at a steady rate, new buying has not been up to brokers' expectations. Material is coming into yards more freely, but the situation could hardly be described as soft. Shipments are still leaving Port Richmond for foreign ports on old orders, but no new business has been placed for months. Some recent Japanese orders for several boatloads have been canceled, but the price has been fully protected, and no distress sales will result.

### **Cleveland**

A Valley district consumer has purchased 25,000 tons of steel-making scrap at advances of 50c. to \$1 a ton above recent quotations. This buyer paid \$22.50 for No. 1 heavy melting steel, \$21 for No. 2 and \$22 for compressed sheet steel. Prices in Cleveland on No. 1 are unchanged but have advanced 50c. to \$1 a ton on steel-making grades and 50c. on borings and turnings. While the market is very firm, the higher prices are bringing out a fair amount of scrap, although some brokers complain of difficulty in buying No. 1 heavy melting steel at \$20 for Cleveland delivery.

### **Buffalo**

The market is very strong. Few transactions have taken place by which prices can be pegged, but there is little question that tonnage transactions would be above present quotations. Dealers probably would not accept at the present time less than \$23 for a tonnage of No. 1 heavy melting steel, though the last known sale of this commodity was at \$21. One of the principal consumers has nominal

offering prices of \$20 for No. 1 and \$18 for No. 2. It is reported that a Buffalo mill has purchased boat scrap in Albany which will figure to about \$22, Buffalo, but this report can not be confirmed. A stove plate user has placed an order for this material at \$16.50. Possibility of an extensive scrap shortage here this winter is indicated, because mills are picking up scrap from stockpiles, when ordinarily they would be laying it down.

### **Boston**

Prices for breakable cast and shafting are higher, but the advance in all other kinds of material apparently has been checked. Movement of material to Pennsylvania is largely confined to breakable cast, steel turnings, blast furnace material and bundled skeleton. Demand for Nos. 1 and 2 steel for export continues brisk. China has become a factor in the market. Recent shipments ran close to 14,000 tons and included 7193 tons to Japan, 5260 to Wales, 725 to China, 507 to Rotterdam, and 300 tons of rails to Liverpool. Two boats are loading scrap, one for England and the other the Far East.

### **New York**

Material is coming into yards a little freely, and brokers have not found it necessary to raise their buying prices to attract sufficient scrap to fill mill orders, with the exception of stove plate, on which the buying price has been raised 50c. to a range of \$12 to \$12.50. Mills are said to be taking what material they can get, and at least one substantial tonnage of railroad material was sold into consumption in the past week. The tight situation in heavy breakable cast has been eased somewhat and the continued rise in that commodity has been halted for the moment. No new export orders are reported. Material is going out on old orders and the barge congestion has practically disappeared.

### **Cincinnati**

Old materials were active the past week, several fairly large tonnage orders for steel scrap being reported. The market moves stronger and bids are up 50c. on all important items. Material attracted by better prices is being rapidly absorbed.

### **St. Louis**

There was some scattered buying of scrap iron during the last week by industries which would take more if it were available at prices within their views. Recent advances in prices have failed to bring out any substantial tonnages of scrap, and some items were stepped up another 50c. a ton.

### **Detroit**

A continued show of strength is evidenced in the Detroit scrap market, with buying continuing steady. With the majority of automobile plants still producing, there is no evidence of a shortage of scrap. It is general opinion that the present condition of the market will be virtually unchanged until the middle of September, with prices possibly tending to higher levels when the automobile plants drop off in scrap production.



# Iron and Steel Scrap Prices

## PITTSBURGH

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.....	\$22.00
Railroad hvy. mltng.....	\$23.50 to 24.00
No. 2 hvy. mltng. steel.....	19.00 to 19.50
No. 2 RR. wrought.....	21.50 to 22.00
Scrap rails.....	24.00 to 24.50
Rails 3 ft. and under.....	25.50 to 26.00
Comp. sheet steel.....	21.75 to 22.00
Hand bundled sheets.....	19.50 to 20.00
Hvy. steel axle turn.....	19.50 to 20.00
Machine shop turn.....	15.50 to 16.00
Short shov. turn.....	15.50 to 16.00
Mixed bor. & turn.....	15.00 to 15.50
Cast iron borings.....	15.00 to 15.50
Cast iron carwheels.....	21.50 to 22.00
Hvy. breakable cast.....	17.50 to 18.00
No. 1 cupola cast.....	20.00 to 20.50
RR. knuckles & cplrs.....	26.50 to 27.00
Rail coil & leaf springs.....	26.50 to 27.00
Rolled steel wheels.....	26.50 to 27.00
Low phos. billet crops.....	26.50 to 27.00
Low phos. sh. bar.....	25.50 to 26.00
Low phos. punchings.....	23.50 to 24.00
Low phos. plate, hvy.....	25.00 to 26.00
Low phos. plate clips.....	23.50 to 24.00
Steel car axles.....	27.00 to 27.50

## PHILADELPHIA

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.....	\$19.50 to \$20.00
No. 2 hvy. mltng. steel.....	17.50 to 18.00
Hydraulic bund., new.....	19.00 to 19.50
Hydraulic bund., old.....	15.50 to 16.00
Steel rails for rolling.....	23.00 to 23.50
Cast iron carwheels.....	20.50 to 21.00
Hvy. breakable cast.....	19.50 to 20.00
No. 1 cast.....	21.00 to 21.50
Stove plate (steel wks.).....	16.50 to 17.00
Railroad malleable.....	19.50 to 20.00
Machine shop turn.....	14.00 to 14.50
No. 1 blast furnace.....	13.50 to 14.00
Cast borings.....	13.50 to 14.00
Heavy axle turnings.....	16.00 to 16.50
No. 1 low phos. hvy.....	24.50 to 25.00
Couplers & knuckles.....	24.50 to 25.00
Rolled steel wheels.....	24.50 to 25.00
Steel axles.....	29.00 to 29.50
Shafting.....	24.00 to 24.50
No. 1 RR. wrought.....	19.50 to 20.00
Spec. iron & steel pipe.....	16.50 to 17.00
No. 1 forge fire.....	17.00 to 17.50
Cast borings (chem.).....	14.50 to 15.00

## CHICAGO

Delivered to Chicago district consumers:	
Per Gross Ton	
Hvy. mltng. steel.....	\$19.50 to \$20.00
Auto. hvy. mltng. steel, alloy free.....	17.50 to 18.00
No. 2 auto. steel.....	15.50 to 16.00
Shoveling steel.....	19.50 to 20.00
Hydraul. comp. sheets.....	18.50 to 19.00
Drop forge flashings.....	16.00 to 16.50
No. 1 busheling.....	13.50 to 14.00
Rolled carwheels.....	22.50 to 23.00
Railroad tires, cut.....	22.50 to 23.00
Railroad leaf springs.....	22.00 to 22.50
Steel coup. & knuckles.....	21.50 to 22.00
Axle turnings.....	18.00 to 18.50
Coll springs.....	24.00 to 24.50
Axle turn. (elec.).....	19.00 to 19.50
Low phos. punchings.....	22.00 to 22.50
Low phos. plates, 12 in. and under.....	22.00 to 22.50
Cast iron borings.....	12.00 to 12.50
Short shov. turnings.....	12.50 to 13.00
Machine shop turn.....	10.50 to 11.00
Rerolling rails.....	21.50 to 22.00
Steel rails under 3 ft.....	22.00 to 22.50
Steel rails under 3 ft.....	22.50 to 23.00
Angle bars, steel.....	22.00 to 22.50
Cast iron carwheels.....	19.50 to 20.00
Railroad malleable.....	20.50 to 21.00
Agric. malleable.....	17.50 to 18.00
Per Net Ton	
Iron car axles.....	\$26.00 to \$26.50
Steel car axles.....	23.50 to 24.00
No. 1 RR. wrought.....	17.25 to 17.75
No. 2 RR. wrought.....	17.25 to 17.75
No. 2 busheling, old.....	9.50 to 10.00
Locomotive tires.....	19.00 to 19.50
Pipes and flues.....	14.00 to 14.50
No. 1 machinery cast.....	16.50 to 17.00
Clean auto. cast.....	15.50 to 16.00
No. 1 railroad cast.....	15.50 to 16.00
No. 1 agric. cast.....	14.00 to 14.50
Stove plate.....	12.00 to 12.50
Grate bars.....	12.50 to 13.00
Brake shoes.....	13.00 to 13.50

## YOUNGSTOWN

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.....	\$21.00 to \$22.00
Hydraulic bundles.....	20.50 to 21.00
Machine shop turn.....	15.50 to 16.00

## CLEVELAND

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.....	\$20.00 to \$20.50
No. 2 hvy. mltng. steel.....	19.00 to 19.50
Comp. sheet steel.....	19.50 to 20.00
Light bund. stampings.....	16.00 to 16.50
Drop forge flashings.....	18.50 to 19.00
Machine shop turn.....	13.00 to 13.50
Short shov. turn.....	13.00 to 13.50
No. 1 busheling.....	19.00 to 19.50
Steel axle turnings.....	15.50 to 16.00
Low phos. billet and bloom crops.....	25.50 to 26.00
Cast iron borings.....	14.00 to 14.50
Mixed bor. & turn.....	14.00 to 14.50
No. 2 busheling.....	13.50 to 14.00
No. 1 cast.....	19.00 to 19.50
Railroad grate bars.....	11.50 to 12.00
Stove plate.....	11.00 to 11.50
Rails under 3 ft.....	24.00 to 24.50
Rails for rollings.....	21.00 to 21.50
Railroad malleable.....	22.00 to 22.50
Cast iron carwheels.....	21.50

## BUFFALO

Per gross ton, f.o.b. consumers' plants:	
No. 1 hvy. mltng. steel.....	\$21.00 to \$21.50
No. 2 hvy. mltng. steel.....	18.50 to 19.00
Scrap rails.....	21.00 to 21.50
New hvy. b'ndled sheet.....	18.50 to 19.00
Old hydraul. bundles.....	17.50 to 18.00
Drop forge flashings.....	18.50 to 19.00
No. 1 busheling.....	18.50 to 19.00
Hvy. axle turnings.....	15.50 to 16.00
Machine shop turn.....	12.50 to 13.00
Knuckles & couplers.....	23.00 to 23.50
Coll & leaf springs.....	23.00 to 23.50
Rolled steel wheels.....	23.00 to 23.50
Low phos. billet crops.....	23.00 to 23.50
Shov. turnings.....	14.00 to 14.50
Mixed bor. & turn.....	13.00 to 13.50
Cast iron borings.....	13.00 to 13.50
Steel car axles.....	21.00 to 22.00
No. 1 machinery cast.....	19.50 to 20.00
No. 1 cupola cast.....	18.00 to 18.50
Stove plate.....	16.00 to 16.50
Steel rails under 3 ft.....	24.00 to 25.00
Cast iron carwheels.....	18.00 to 18.50
Railroad malleable.....	20.00 to 20.50
Chemical borings.....	13.50 to 14.00

## ST. LOUIS

Dealer's buying prices per gross ton delivered to consumer:	
Selected hvy. metal.....	\$17.25 to \$17.50
No. 1 hvy. melting.....	16.75 to 17.25
No. 2 hvy. melting.....	15.50 to 16.00
No. 1 locomotive tires.....	19.00 to 19.50
Misc. stand.-sec. rails.....	18.00 to 18.50
Railroad springs.....	21.00 to 21.50
Bundled sheets.....	14.00 to 14.50
No. 2 RR. wrought.....	16.75 to 17.25
No. 1 busheling.....	12.00 to 12.50
Cast bor. & turn.....	8.50 to 9.00
Rails for rolling.....	19.50 to 20.00
Machine shop turn.....	9.00 to 9.50
Heavy turnings.....	13.50 to 14.00
Steel car axles.....	23.00 to 23.50
Iron car axles.....	24.00 to 24.50
No. 1 RR. wrought.....	15.00 to 15.50
Steel rails under 3 ft.....	20.00 to 20.50
Steel angle bars.....	19.00 to 19.50
Cast iron carwheels.....	18.00 to 18.50
No. 1 machinery cast.....	14.00 to 14.50
Railroad malleable.....	19.50 to 20.00
No. 1 railroad cast.....	14.00 to 14.50
Stove plate.....	12.50 to 13.00
Agricul. malleable.....	12.50 to 13.00
Grate bars.....	12.00 to 12.50
Brake shoes.....	12.00 to 12.50

## CINCINNATI

Dealer's buying prices per gross ton:	
No. 1 hvy. mltng. steel.....	\$18.50 to \$19.00
No. 2 hvy. mltng. steel.....	15.50 to 16.00
Scrap rails for mltng.....	21.00 to 21.50
Loose sheet clippings.....	14.00 to 14.50
Hydraul. b'nd'd sheets.....	17.00 to 17.50
Cast iron borings.....	11.00 to 11.50
Machine shop turn.....	11.50 to 12.00
No. 1 busheling.....	15.50 to 16.00
No. 2 busheling.....	9.00 to 9.50
Rails for rolling.....	23.00 to 23.50
No. 1 locomotive tires.....	19.50 to 20.00
Short rails.....	24.00 to 24.50
Cast iron carwheels.....	17.50 to 18.00
No. 1 machinery cast.....	16.50 to 17.00
No. 1 railroad cast.....	16.00 to 16.50
Burnt cast.....	11.50 to 12.00
Stove plate.....	11.50 to 12.00
Agricul. malleable.....	13.00 to 13.50
Railroad malleable.....	20.00 to 20.50
Mixed hvy. cast.....	14.00 to 14.50

## BIRMINGHAM

Per gross ton delivered to consumer:	
Hvy. melting steel.....	\$16.00 to \$16.50
Scrap steel rails.....	17.00
Short shov. turnings.....	9.00 to 10.00
Stove plate.....	10.00
Steel axles.....	15.00 to 16.00
Iron axles.....	16.50 to 17.00
No. 1 RR. wrought.....	13.00 to 15.00
Rails for rolling.....	13.00 to 20.00
No. 1 cast.....	18.00 to 18.00
Tramcar wheels.....	16.00 to 18.00

## DETROIT

Dealer's buying prices per gross ton:	
No. 1 hvy. mltng. steel.....	\$17.50 to \$18.00
No. 2 hvy. mltng. steel.....	16.50 to 17.00
Borings and turnings.....	13.25 to 13.75
Long turnings.....	12.50 to 13.00
Short shov. turnings.....	14.00 to 14.50
No. 1 machinery cast.....	16.00 to 16.50
Automotive cast.....	16.75 to 17.25
Hydraul. comp. sheets.....	13.50 to 19.00
Stove plate.....	10.50 to 11.00
New factory bushel.....	17.00 to 17.50
Old No. 2 busheling.....	11.50 to 12.00
No. 2 busheling (black fender stock).....	14.25 to 14.75
Sheet clippings.....	13.50 to 14.00
Flashings.....	16.25 to 16.75
Low phos. plate scrap.....	18.50 to 19.00

## NEW YORK

Dealer's buying prices per gross ton:	
No. 1 hvy. mltng. steel.....	\$16.00 to \$16.50
No. 2 hvy. mltng. steel.....	14.50 to 15.00
Hvy. breakable cast.....	15.50 to 16.00
No. 1 machinery cast.....	15.50 to 16.00
No. 2 cast.....	14.50 to 15.00
Stove plate.....	12.00 to 12.50
Steel car axles.....	27.00 to 27.50
Shafting.....	19.50 to 20.00
No. 1 RR. wrought.....	17.50 to 18.00
No. 1 wrought long.....	16.50 to 17.00
Spec. iron & steel pipe.....	13.00 to 13.50
Rails for rolling.....	18.00 to 18.50
Clean steel turnings.....	9.50 to 10.00
Cast borings.....	9.00 to 9.50
No. 1 blast furnace.....	9.00 to 9.50
Cast borings (chem.).....	12.50 to 13.00
Unprepar. yard scrap.....	9.50 to 10.00
Per gross ton, delivered local foundries:	
No. 1 machn. cast.....	\$17.00 to \$17.50
No. 1 hvy. cast cupola.....	14.50 to 15.00
No. 2 cast.....	14.00 to 14.50

## BOSTON

Dealer's buying prices per gross ton:	
No. 1 hvy. mltng. steel.....	\$15.50 to \$16.30
Scrap rails.....	16.00 to 16.50
No. 2 steel.....	14.50 to 15.00
Breakable cast.....	15.00 to 15.50
Machine shop turn.....	9.30 to 10.00
Mixed bor. & turn.....	9.30 to 10.30
Bund. skeleton long.....	12.50 to 12.75
Shafting.....	19.00 to 19.50
Cast bor. chemical.....	9.00 to 10.00
Per gross ton delivered consumers' yards:	
Textile cast.....	\$13.00 to \$13.00
No. 1 machine cast.....	13.00 to 19.00

## CANADA

Dealer's buying prices at their yards, per gross ton	
Toronto Montreal	
No. 1 hvy. mltng. stl.....	\$12.50 \$12.00
No. 2 hvy. mltng. stl.....	11.50 11.00
Mixed dealers steel.....	11.00 10.50
Scrap pipe.....	10.00 9.75
Steel turnings.....	8.00 8.00
Cast borings.....	9.25 9.00
Machinery cast.....	16.00 15.50
Dealers cast.....	14.00 14.00
Stove plate.....	12.00 11.00

## EXPORT

Dealer's buying prices per gross ton:	
New York, truck lots, delivered, barges.	
No. 1 hvy. mltng. steel.....	\$16.50
No. 2 hvy. mltng. steel.....	15.50
No. 2 cast.....	14.50
Stove plate.....	12.50
Boston on cars at Army Base or Mystic Wharf	
No. 1 hvy. mltng. steel.....	\$13.00
No. 2 hvy. mltng. steel.....	17.00
Rails (scrap).....	13.00
Philadelphia, delivered alongside boats, Port Richmond	
No market at present.	

# PRICES ON FINISHED AND SEMI-FINISHED IRON AND STEEL

## SEMI-FINISHED STEEL

### Billets, Blooms and Slabs

F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham. Prices at Duluth are \$2 a ton higher, and delivered Detroit \$3 higher.

Per Gross Ton  
 Rerolling .....\$37.00  
 Forging quality ..... 43.00

### Sheet Bars

F.o.b. Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

Per Gross Ton  
 Open-hearth or Besse-  
 mer .....\$37.00

### Skelp

F.o.b. Pittsburgh, Chicago, Youngs-  
 town, Buffalo, Coatesville, Pa., Spar-  
 rows Point, Md.

Per Lb.  
 Grooved, universal and  
 sheared .....2.10c.

### Wire Rods

(No. 5 to 9/32 in.)

Per Gross Ton  
 F.o.b. Pittsburgh or Cleveland.....\$47.00  
 F.o.b. Chicago, Youngstown or  
 Anderson, Ind. .... 48.00  
 F.o.b. Worcester, Mass. .... 49.00  
 F.o.b. Birmingham ..... 50.00  
 F.o.b. San Francisco ..... 56.00  
 F.o.b. Galveston ..... 53.00  
 Rods over 9/32 in. to 47/64 in., in-  
 clusive, \$5 a ton over base.

## BARs, PLATES, SHAPES

### Iron and Steel Bars

#### Soft Steel

Base per Lb.  
 F.o.b. Pittsburgh .....2.45c.  
 F.o.b. Chicago or Gary .....2.50c.  
 F.o.b. Duluth .....2.60c.  
 Del'd Detroit .....2.60c.  
 F.o.b. Cleveland .....2.60c.  
 F.o.b. Buffalo .....2.55c.  
 Del'd Philadelphia .....2.74c.  
 Del'd New York .....2.78c.  
 F.o.b. Birmingham .....2.60c.  
 F.o.b. cars dock Gulf ports .....2.85c.  
 F.o.b. cars dock Pacific ports .....3.00c.

#### Rail Steel

(For merchant trade)

F.o.b. Pittsburgh .....2.30c.  
 F.o.b. Cleveland, Chicago, Gary  
 or Moline, Ill. ....2.35c.  
 F.o.b. Buffalo .....2.40c.  
 F.o.b. Birmingham .....2.45c.  
 F.o.b. cars dock Gulf ports .....2.70c.  
 F.o.b. cars dock Pacific ports .....2.85c.

**Billet Steel Reinforcing**  
 (Straight lengths as quoted by  
 distributors)

F.o.b. Pittsburgh .....2.55c.  
 F.o.b. Buffalo, Cleveland,  
 Youngstown, Chicago, Gary  
 or Birmingham .....2.60c.  
 Del'd Detroit .....2.70c.  
 F.o.b. cars dock Gulf ports .....2.95c.  
 F.o.b. cars dock Pacific ports .....2.95c.

**Rail Steel Reinforcing**  
 (Straight lengths as quoted by  
 distributors)

F.o.b. Pittsburgh .....2.40c.  
 F.o.b. Buffalo, Cleveland,  
 Youngstown, Chicago, Gary  
 or Birmingham .....2.45c.  
 F.o.b. cars dock Gulf ports .....2.80c.  
 F.o.b. cars dock Pacific ports .....2.80c.

### Iron

F.o.b. Chicago .....2.40c.  
 F.o.b. Pittsburgh (refined) ....3.60c.

#### Cold Finished Bars and Shafting\*

Base per Lb.  
 F.o.b. Pittsburgh .....2.90c.  
 F.o.b. Cleveland, Chicago and  
 Gary .....2.95c.  
 F.o.b. Buffalo .....3.00c.  
 F.o.b. Detroit .....2.95c.

\* In quantities of 10,000 to 10,999 lb.

### Plates

Base per Lb.  
 F.o.b. Pittsburgh .....2.25c.  
 F.o.b. Chicago or Gary .....2.30c.  
 Del'd Cleveland .....2.435c.  
 F.o.b. Coatesville or Spar. Pt. ....2.35c.  
 Del'd Philadelphia .....2.435c.  
 Del'd New York .....2.53c.  
 F.o.b. Birmingham .....2.40c.

F.o.b. cars dock Gulf ports ....2.65c.  
 F.o.b. cars dock Pacific ports...2.80c.  
 Wrought iron plates, f.o.b.  
 Pittsburgh .....3.80c.

### Floor Plates

F.o.b. Pittsburgh .....3.50c.  
 F.o.b. Chicago .....3.55c.  
 F.o.b. Coatesville .....3.60c.  
 F.o.b. cars dock Gulf ports ....3.90c.  
 F.o.b. cars dock Pacific ports...4.05c.

### Structural Shapes

Base per Lb.  
 F.o.b. Pittsburgh .....2.25c.  
 F.o.b. Chicago .....2.30c.  
 Del'd Cleveland .....2.435c.  
 F.o.b. Buffalo or Bethlehem...2.35c.  
 Del'd Philadelphia .....2.455c.  
 Del'd New York .....2.5025c.  
 F.o.b. Birmingham (standard) 2.40c.  
 F.o.b. cars dock Gulf ports ....2.65c.  
 F.o.b. cars dock Pacific ports...2.80c.

### Steel Sheet Piling

Base per Lb.  
 F.o.b. Pittsburgh .....2.60c.  
 F.o.b. Chicago or Buffalo .....2.70c.  
 F.o.b. cars dock Gulf or Pacific  
 Coast ports .....3.05c.

## RAILS AND TRACK SUPPLIES

### F.o.b. Mill

Standard rails, heavier than  
 60 lb., per gross ton .....\$42.50  
 Angle bars, per 100 lb. ....2.80

### F.o.b. Basing Points

Light rails (from billets) per  
 gross ton .....\$43.00  
 Light rails (from rail steel) per  
 gross ton .....42.00

Base per Lb.  
 Spikes .....3.15c.  
 Tie plates, steel .....2.30c.  
 Tie plates, Pacific Coast ports...2.40c.  
 Track bolts, to steam railroads. 4.35c.  
 Track bolts, to jobbers, all sizes  
 (per 100 counts) .....

65-5 per cent off list  
 Basing points on light rails are Pittsburgh,  
 Chicago and Birmingham; on spikes and tie  
 plates, Pittsburgh, Chicago, Portsmouth, Ohio,  
 Weirton, W. Va., St. Louis, Kansas City,  
 Minneapolis, Colo., Birmingham and Pacific Coast  
 ports; on tie plates alone, Steelton, Pa.,  
 Buffalo; on spikes alone, Youngstown, Lebanon,  
 Pa., Richmond, Va.

## SHEETS, STRIP, TIN PLATE

### TERNE PLATE

#### Sheets

#### Hot Rolled

Base per Lb.  
 No. 10, f.o.b. Pittsburgh .....2.40c.  
 No. 10, f.o.b. Gary .....2.50c.  
 No. 10, del'd Detroit .....2.60c.  
 No. 10, del'd Philadelphia .....2.69c.  
 No. 10, f.o.b. Granite City .....2.60c.  
 No. 10, f.o.b. Birmingham .....2.55c.  
 No. 10, f.o.b. cars dock Pacific  
 ports .....2.95c.  
 No. 10 wrought iron, Pgh. ....4.25c.

#### Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh .....3.15c.  
 No. 24, f.o.b. Gary .....3.25c.  
 No. 24, del'd Detroit .....3.35c.  
 No. 24, del'd Philadelphia .....3.44c.  
 No. 24, f.o.b. Granite City .....3.35c.  
 No. 24, f.o.b. Birmingham .....3.30c.  
 No. 24, f.o.b. cars dock Pacific  
 ports .....3.80c.  
 No. 24 wrought iron, Pitts-  
 burgh .....5.15c.

#### Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh...3.10c.  
 No. 10 gage, f.o.b. Gary .....3.20c.  
 No. 10 gage, f.o.b. Detroit .....3.30c.  
 No. 10 gage, del'd Philadelphia...3.39c.  
 No. 10, f.o.b. Granite City .....3.30c.  
 No. 10 gage, f.o.b. Birmingham...3.25c.  
 No. 10 gage, f.o.b. cars dock  
 Pacific ports .....3.70c.

#### Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh...3.55c.  
 No. 20 gage, f.o.b. Gary .....3.65c.  
 No. 20 gage, del'd Detroit .....3.75c.  
 No. 20 gage, del'd Philadelphia...3.84c.  
 No. 20, f.o.b. Granite City .....3.75c.  
 No. 20 gage, f.o.b. Birmingham...3.70c.  
 No. 20 gage, f.o.b. cars, dock,  
 Pacific ports .....4.10c.

#### Galvanized Sheets

No. 24 gage, f.o.b. Pittsburgh...3.80c.  
 No. 24, f.o.b. Gary .....3.90c.  
 No. 24, del'd Philadelphia .....4.09c.  
 No. 24, f.o.b. Granite City .....4.00c.

No. 24, f.o.b. Birmingham .....3.95c.  
 No. 24, f.o.b. cars, dock, Pacific  
 ports .....4.40c.  
 No. 24, wrought iron, Pitts-  
 burgh .....6.10c.

### Electrical Sheets

(F.o.b. Pittsburgh)

Base per Lb.  
 Field grade .....3.35c.  
 Armature .....3.70c.  
 Electrical .....4.20c.  
 Special Motor .....5.10c.  
 Special Dynamo .....5.80c.  
 Transformer .....6.30c.  
 Transformer Special .....7.30c.  
 Transformer Extra Special .....7.80c.

Base gage changed from 28 to 24 gage. Gage  
 extras are the same as those applying on hot-  
 rolled, annealed sheets with few exceptions.

Silicon Strip in coils—Sheet prices plus sil-  
 icon sheet extra width extras plus 25c. per 100  
 lb. for coils.

### Long Ternes

No. 24, unassorted 8-lb. coating  
 f.o.b. Pittsburgh .....4.10c.  
 F.o.b. Gary .....4.20c.  
 F.o.b. cars, dock, Pacific ports 4.80c.

### Vitreous Enameling Stock

No. 20, f.o.b. Pittsburgh .....3.50c.  
 No. 20, f.o.b. Gary .....3.60c.  
 No. 20, f.o.b. Granite City .....3.70c.  
 No. 20, f.o.b. cars dock Pacific  
 ports .....4.10c.

### Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh, per  
 lb. ....3.30c.  
 No. 28, Gary .....3.40c.  
 No. 28, f.o.b. Granite City .....3.50c.  
 No. 28, cars dock Pacific ports,  
 boxed .....4.175c.

### Tin Plate

Base per Box  
 Standard cokes, f.o.b. Pitts-  
 burgh district mill .....\$5.35  
 Standard cokes, f.o.b. Gary .....5.45  
 Standard coke, f.o.b. Granite  
 City .....5.55

Above quotations practically the  
 equivalent of previous quotations  
 owing to new method of quoting,  
 effective Jan. 1, 1937.

### Special Coated Manufacturing Ternes

Base per Box  
 F.o.b. Pittsburgh .....\$4.65  
 F.o.b. Gary .....4.75  
 F.o.b. Granite City .....4.85

\* Customary 1% per cent discount in effect  
 through 1936 discontinued as of Jan. 1, 1937.

### Roofing Terne Plate

(F.o.b. Pittsburgh)

(Per Package, 112 sheets, 20 x 28 in.)  
 8-lb. coating I.C. ....\$12.00  
 15-lb. coating I.C. ....14.00  
 20-lb. coating I.C. ....15.00  
 25-lb. coating I.C. ....16.00  
 30-lb. coating I.C. ....17.25  
 40-lb. coating I.C. ....19.50

### Hot-Holed Hoops, Bands, Strip and Flats under 1/4 in.

Base per Lb.  
 All widths up to 24 in., Pitts-  
 burgh .....2.40c.  
 All widths up to 24 in., Chicago 2.50c.  
 All widths up to 24 in., del'd  
 Detroit .....2.60c.  
 All widths up to 24 in., Granite  
 City .....2.60c.  
 All widths up to 24 in.,  
 Birmingham .....2.55c.  
 Cooperage stock, Pittsburgh...2.50c.  
 Cooperage stock, Chicago ....2.60c.

### Cold-Rolled Strip\*

Base per Lb.  
 F.o.b. Pittsburgh .....3.20c.  
 F.o.b. Cleveland .....3.20c.  
 Del'd Chicago .....3.48c.  
 F.o.b. Worcester .....3.40c.

\* Carbon 0.25 and less.

### Cold Rolled Spring Steel

Pittsburgh

and

Cleveland Worcester

Carbon 0.25-0.50% 3.20c. 3.40c.  
 Carbon .51-.75 4.45c. 4.65c.  
 Carbon .76-1.00 6.30c. 6.50c.  
 Carbon Over 1.00 8.50c. 8.70c.

### Fender Stock

No. 14, Pittsb'gh or Cleveland 2.45c.  
 No. 20, Pittsb'gh or Cleveland. 2.85c.



## WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland)

### To Manufacturing Trade

	Per Lb.
Bright wire .....	2.90c.
Galvanized wire .....	2.95c.
Spring wire .....	3.50c.

Chicago prices on products sold to the manufacturing trade are \$1 a ton above Pittsburgh or Cleveland. Worcester and Duluth prices are \$2 a ton above, Birmingham \$3 above, and Pacific Coast prices \$9 a ton above Pittsburgh or Cleveland.

### To the Trade

	Base per Keg
Standard wire nails .....	\$2.75
Smooth coated nails .....	\$2.75
Cut nails, carloads .....	\$3.60

### Base per 100 Lb.

Annealed fence wire .....	\$3.20
Galvanized fence wire .....	3.60
Polished staples .....	3.45
Galvanized staples .....	3.70
Barbed wire, galvanized .....	3.40
Twisted barbed wire .....	3.40
Woven wire fence, base column. 74	
Single loop bale ties, base col....	63

Chicago and Anderson, Ind., mill prices are \$1 a ton over Pittsburgh base (on all products except woven wire fence, for which the Chicago price is \$2 above Pittsburgh); Duluth, Minn., mill prices are \$3 a ton over Pittsburgh, except for woven wire fence, which is \$3 over Pittsburgh and Birmingham mill prices are \$3 a ton over Pittsburgh.

On wire nails, barbed wire and staples, prices at Houston, Galveston and Corpus Christi, Tex., New Orleans, Lake Charles, La., and Mobile, Ala., are \$6 a ton over Pittsburgh.

On nails, staples and barbed wire, prices of \$6 a ton above Pittsburgh are also quoted at Beaumont and Orange, Tex.

## STEEL AND WROUGHT IRON PIPE AND TUBING

### Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills  
F.o.b. Pittsburgh only on wrought iron pipe.

### Butt Weld

In.	Black Galv.	In.	Black Galv.
1/4 .....	52 31	1/4 & 1/2 .....	+13 +35
1/2 to 3/4 .....	55 38 1/2	1/2 .....	20 1 1/2
3/4 .....	59 49	3/4 .....	26 8
1 to 3 .....	62 53	1 & 1 1/4 .....	30 14
		1 1/2 .....	34 16 1/2
		2 .....	33 16

### Lap Weld

2 .....	57 47 1/2	2 .....	26 1/2 10
2 1/2 & 3 .....	60 50 1/2	2 1/2 to 3 1/2 .....	27 12 1/2
3 1/2 to 6 .....	62 52 1/2	4 .....	29 16
7 & 8 .....	61 50 1/2	4 1/2 to 8 .....	28 15
9 & 10 .....	60 50	9 to 12 .....	24 10
11 & 12 .....	59 49		

Butt Weld, extra strong, plain ends				
1/4 .....	50 3/4	36 1/2	1/4 & 1/2 .....	+14 +48
1/2 to 3/4 .....	52 1/2	40 1/2	1/2 .....	21 4
3/4 .....	57 1/2	48 1/2	3/4 .....	27 10
1 to 3 .....	61 1/2	52 1/2	1 to 2 .....	34 17 1/2

Lap Weld, extra strong, plain ends		Lap Weld, extra strong, plain ends	
2 .....	55 46½	2 .....	29½ 13½
2½ & 3 .....	59 50½	2½ to 4 .....	35 20½
3½ to 6 .....	62 54	4½ to 6 .....	33 19
7 & 8 .....	61½ 51	7 & 8 .....	34½ 19½
9 & 10 .....	60½ 50	9 to 12 .....	28 15½
11 & 12 .....	59½ 49		

On butt-weld and lap-weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

### Boiler Tubes

Seamless Steel Commercial Boiler Tubes and Locomotive Tubes  
(Net base prices per 100 ft. f.o.b. Pittsburgh in carload lots)

	Cold Drawn	Hot Rolled
1 in. o.d. ....	13 B.W.G. \$ 9.46	\$ 8.41
1 1/4 in. o.d. ....	13 B.W.G. 11.21	9.96
1 1/2 in. o.d. ....	13 B.W.G. 12.38	11.09
2 in. o.d. ....	13 B.W.G. 14.09	12.51
2 1/4 in. o.d. ....	13 B.W.G. 15.78	14.02
2 1/2 in. o.d. ....	13 B.W.G. 17.60	15.63
2 3/4 in. o.d. ....	13 B.W.G. 19.37	17.21
3 in. o.d. ....	13 B.W.G. 21.22	18.85
3 1/4 in. o.d. ....	13 B.W.G. 22.49	19.98
3 1/2 in. o.d. ....	13 B.W.G. 23.60	20.97
4 in. o.d. ....	13 B.W.G. 25.19	22.47
4 1/4 in. o.d. ....	13 B.W.G. 26.96	23.93
5 in. o.d. ....	13 B.W.G. 28.71	25.38
6 in. o.d. ....	13 B.W.G. 37.07	37.35

### Extra for less-carload quantities:

25,000 lb. or ft. to 29,999 lb. or ft.	5 %
12,000 lb. or ft. to 24,999 lb. or ft.	12 1/2 %
5,000 lb. or ft. to 11,999 lb. or ft.	25 %
2,000 lb. or ft. to 4,999 lb. or ft.	35 %
Under 2,000 lb. or ft.	50 %

## CAST IRON WATER PIPE

	Per Net Ton
*6-in. and larger, del'd Chicago .....	\$35.00
6-in. and larger, del'd New York .....	53.00
*6-in. and larger, Birmingham .....	47.00
6-in. and larger, f.o.b. dock, San Francisco or Los Angeles .....	56.00
F.o.b. dock, Seattle .....	56.00
4-in., f.o.b. dock, San Francisco or Los Angeles .....	59.00
F.o.b. dock, Seattle .....	59.00

Class "A" and gas pipe, \$3 extra.  
4-in. pipe is \$3 a ton above 6-in.

Prices for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is \$46, Birmingham, and \$54 delivered Chicago; and 4-in. pipe, \$49, Birmingham, and \$58 delivered Chicago.

## BOLTS, NUTS, RIVETS, SET SCREWS

### Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

### Per Cent Off List

Machine and carriage bolts:	
1/4 in. x 6 in. and smaller .....	65 and 5*
Larger and longer up to	
1 in. ....	60 and 10*
1 1/4 in. and larger .....	60 and 5*
Lag bolts .....	60 and 10*
Plow bolts, Nos. 1, 2, 3	
and 7 .....	65 and 5
Hot pressed nuts, and c.p.c.	
and t nuts, square or hex.	
blank or tapped:	
1/4 in. and smaller .....	65
9/16 in. to 1 in. inclusive .....	60 and 5
1 1/4 in. and larger .....	60

Jobbers discount on above items, 5 per cent.

\* Less carload lots and less than full container quantity. Less carload lots in full container quantity, an additional 10 per cent discount; carload lots and full container quantity, still another 5 per cent discount.

## Semi-finished hexagon nuts, U.S.S. and S.A.E.

1/4 in. and smaller .....	60 and 10
9/16 in. to 1 in. inclusive .....	60 and 5
1 1/4 in. and larger .....	60
Stove bolts in packages, nuts attached .....	72 1/2
Stove bolts in packages, with nuts separate .....	72 1/2 and 5
Stove bolts in bulk .....	80

On stove bolts freight is allowed to destination on 200 lb. and over.

### Large Rivets

(1/2-in. and larger)

### Base per 100 Lbs.

F.o.b. Pittsburgh or Cleveland .....	\$3.60
F.o.b. Chicago or Birmingham .....	3.70

### Small Rivets

(7/16-in. and smaller)

### Per Cent Off List

F.o.b. Pittsburgh .....	65 and 5
F.o.b. Cleveland .....	65 and 5
F.o.b. Chicago and Birmingham .....	65 and 5

### Cap and Set Screws

(Freight allowed up to but not exceeding 65c. per 100 lb. on lots of 200 lb. or more)

### Per Cent Off List

Milled cap screws, 1 in. dia. and smaller .....	60 and 10
Milled standard set screws, case hardened, 1 in. dia. and smaller .....	75
Milled headless set screws, cut thread 1/4 in. and smaller .....	75
Upset hex. head cap screws U.S.S. or S.A.E. thread, 1 in. and smaller .....	60
Upset set screws, cup and oval points .....	75
Milled studs .....	65

## Alloy and Stainless Steel

Alloy Steel Blooms, Billets and Slabs  
F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem.  
Base price, \$60 a gross ton.

### Alloy Steel Bars

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.  
Open-hearth grade, base .....

Delivered, Detroit .....	3.15c.
S.A.E. Series	
Numbers	Differential per 100 lb.
200 (1/4% Nickel) .....	\$0.35
2100 (1 1/4% Nickel) .....	0.75
2300 (3 1/4% Nickel) .....	1.55

2500 (5% Nickel) .....	\$2.20
3100 Nickel-chromium .....	0.70
3200 Nickel-chromium .....	1.35
3300 Nickel-chromium .....	3.90
3400 Nickel-chromium .....	3.20
4100 Chromium-molybdenum (0.15 to 0.25 Molybdenum) .....	0.55
4100 Chromium-molybdenum (0.25 to 0.40 Molybdenum) .....	0.75
4600 Nickel-molybdenum (0.30 to 0.30 Mo, 1.50 to 2.00 Ni) .....	1.10
5100 Chrome steel (0.60-0.90 Cr.) .....	0.35
5100 Chrome steel (0.90-1.10 Cr.) .....	0.45
5100 Chromium spring steel .....	0.15
5100 Chromium-vanadium bar .....	1.30
5100 Chromium-vanadium spring steel .....	0.85
Chromium-nickel-vanadium .....	1.50
Carbon-vanadium .....	0.95

These prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. Slabs with a section area of 16 in. and 3 1/2 in. thick or over take the billet base.

### Alloy Cold-Finished Bars

F.o.b. Pittsburgh, Chicago, Gary, Cleveland or Buffalo, 3.60c. base per lb. Delivered Detroit, 3.75c., carlots.

## CORROSION & HEAT RESISTANT ALLOYS

(Base prices, cents per lb., f.o.b. Pittsburgh)

### Chrome-Nickel

	No. 304	No. 302
Forging billets ....	21.25c.	20.40c.
Bars .....	25c.	24c.
Plates .....	29c.	27c.
Structural shapes ..	25c.	24c.
Sheets .....	36c.	34c.
Hot-rolled strip ..	23.50c.	21.50c.
Cold-rolled strip ..	30c.	28c.
Drawn wire .....	25c.	24c.

### Straight Chrome

	No. 410	No. 430	No. 442	No. 446
Bars ..	12.50c.	19c.	22.50c.	27.50c.
Plates ..	21.50c.	22c.	25.50c.	30.50c.
Sheets ..	26.50c.	29c.	32.50c.	36.50c.
Hot strip 17c.	17.50c.	23c.	28c.	
Cold stp. 22c.	22.50c.	28.50c.	36.50c.	

## TOOL STEEL

High speed .....	67c.
High-carbon-chrome .....	43c.
Oil-hardening .....	24c.
Special .....	23c.
Extra .....	18c.
Regular .....	14c.

Prices for warehouse distribution to all points on or East of Mississippi River are 2c. a lb. higher. West of Mississippi quotations are 5c. a lb. higher.

## British and Continental

### BRITISH

Per Gross Ton  
f.o.b. United Kingdom Ports

Ferromanganese, ex-port .....	£20 Nominal
Tin plate, per base box 25s. to 25s. 6d.	
Steel bars, open-hearth .....	£11 2s. 6d.
Beams, open-hearth .....	£11 7s. 6d.
Channels, open-hearth .....	£11 2s. 6d.
Angles, open-hearth .....	£11 2s. 6d.
Black sheets, No. 24 gage .....	£15
Galvanized sheets, No. 24 gage .....	£18 15s.

## CONTINENTAL

Per Gross Ton, Gold £,  
f.o.b. Continental Ports

Billets, Thomas .....	£4 7s. 6d.
Wire rods, No. 5 B.W.G. .....	£6 15s.
Steel bars, merchant .....	£6 to £2 5s.
Sheet bars .....	£4 8s. 6d.
Plate 1/4 in. and up .....	£6 17s. 6d. to £7
Plate 3/16 in. and 5 mm. .....	£7 2s. 6d.
Sheet, 1/4 in. ....	£3 9s. 6d.
Beams, Thomas .....	£5 2s. 6d.
Angles (Basic) .....	£6 2s. 6d.
Hoops and strip, base .....	£7 to £7 5s.

# IRON AND STEEL WAREHOUSE PRICES

## PITTSBURGH\*

	Per Net Ton
Plates	3.70c.
Structural shapes	3.70c.
Soft steel bars and small shapes	3.80c.
Reinforcing steel bars	3.80c.
Cold-finished and screw stock:	
Rounds and hexagons	4.15c.
Squares and flats	4.15c.
Hot rolled strip incl. 3/16 in. thick, under 24 in. wide	4.00c.
Hoops	4.50c.
Hot-rolled annealed sheets (No. 24), 10 or more bundles	4.50c.
Galv. sheets (No. 24), 10 or more bundles	5.15c.
Hot-rolled sheets (No. 10)	3.75c.
Galv. corrug. sheets (No. 28), per square (more than 3750 lb.)	\$4.48
Spikes, large	1 to 24 kegs 3.90c.

	Per Cent Off List
Track bolts, all sizes, per 100 count	55
Machine bolts, 100 count	**
Carriage bolts, 100 count	**
Nuts, all styles, 100 count	**
Large rivets, base per 100 lb.	\$4.35
Wire, black, soft ann'd, base per 100 lb.	3.45c.
Wire, galv. soft, base per 100 lb.	3.85c.
Common wire nails, per keg	3.00c.
Cement coated nails, per keg	3.00c.

On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applies to orders of 400 to 9999 lb.

\*Delivered in Pittsburgh switching district.

\*\*Prices on application.

## CHICAGO Base per Lb.

Plates and structural shapes	3.75c.
Soft steel bars, rounds	3.35c.
Soft steel bars, squares and hexagons	4.00c.
Cold-fin. steel bars:	
Rounds and hexagons	4.30c.
Flats and squares	4.30c.
Hot-rolled strip	4.10c.
Hot-rolled annealed sheets (No. 24)	4.60c.
Galv. sheets (No. 24)	5.25c.
Spikes (keg lots)	4.40c.
Track bolts (keg lots)	5.60c.
Rivets, structural (keg lots)	4.60c.
Rivets, boiler (keg lots)	4.70c.

	Per Cent Off List
Machine bolts	50
Carriage bolts	50
Lag screws	55 and 5
Hot-pressed nuts, sq. tap or blank	60
Hot-pressed nuts, hex. tap or blank	60
Hex. head cap screws	60
Cut point set screws	75
Flat head bright wood screws	62 and 20
Spring cotters	45
Stove bolts in full packages	72 1/2
Rd. hd. tank rivets, 7/16 in. and smaller	55
Wrought washers	\$4.00 off list
Black ann'd wire per 100 lb. to mfg. trade (No. 14 and heavier)	\$4.55
Com. wire nails, 15 kegs or more, per keg	\$3.20
Cement c't'd nails, 15 kegs or more, per keg	\$3.20

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 9999 lb. All prices are f.o.b. consumers' plants within the Chicago switching district.

\*These are quotations delivered to city trade for quantities of 100 lb. or more. For lots of less than 100 lb., the quotation is 60 per cent off. Discounts applying to country trade are 70 per cent off, f.o.b. Chicago, with full or partial freight allowed up to 50c. per 100 lb.

## NEW YORK

	Base per Lb.
Plates, 1/4 in. and heavier	4.00c.
Structural shapes	3.97c.
Soft steel bars, round	4.12c.
Iron bars, Swed. charcoal	7.00 to 7.25c.
Cold-fin. shafting and screw stock:	
Rounds and hexagons	4.57c.
Flats and squares	4.57c.
Cold-rolled; strip, soft and quarter hard	3.92c.
Hoops	4.32c.

Bands	4.32c.
Hot-rolled sheets (No. 10)	4.00 to 4.07c.
Hot-rolled ann'd sheets (No. 24*)	4.50 to 4.82c.
Galvanized sheets (No. 24*)	5.47c.
Long terme sheets (No. 24)	5.50 to 6.20c.
Armco iron, galv. (No. 24†)	6.25c.
Toncan iron, galv. (No. 24†)	6.25c.
Galvanneal (No. 24†)	6.60c.
Armco iron, hot-rolled annealed (No. 24†)	5.65c.
Toncan iron, hot-rolled annealed (No. 24†)	5.65c.
Armco iron hot-rolled (No. 10†)	4.60c.
Toncan iron, hot-rolled (No. 10†)	4.60c.
Cold-rolled sheets (No. 20) for quantities 400 to 1499 lb.	
Standard quality	5.40c.
Deep drawing	6.05c.
Stretcher leveled	6.05c.
SAE, 2300, hot-rolled	7.82c.
SAE, 3100, hot-rolled	8.37c.
SAE, 6100, hot-rolled, annealed	10.52c.
SAE, 2300, cold-rolled	9.00c.
SAE, 3100, cold-rolled, annealed	8.55c.
Floor plate, 1/4 in. and heavier	5.90c.
Standard tool steel	12.50c.
Wire, black, annealed (No. 9)	4.25c.
Wire, galv. (No. 9)	4.60c.
Tire steel, 1 x 1/2 in. and larger	4.61c.
Open-hearth spring steel	4.75c. to 10.25c.
Common wire nails, base per keg	3.25c.

	Per Cent Off List
Machine bolts, square head and nut:	
All diameters. Prices on application	
Carriage bolts, cut thread:	
All diameters. Prices on application	
* No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.	
† 125 lb. and more.	

## ST. LOUIS Base per Lb.

Plates and struc. shapes	3.99c.
Bars, soft steel (rounds and flats)	4.09c.
Bars, soft steel (squares, hexagons, ovals, half ovals and half rounds)	4.24c.
Cold-fin. rounds, shafting, screw stock	4.54c.
Hot-rolled annealed sheets (No. 24)	4.84c.
Galv. sheets (No. 24*)	5.49c.
Hot-rolled sheets (No. 10)	4.09c.
Black corrug. sheets (No. 24*)	4.89c.
2 galv. corrug. sheets	5.54c.
Structural rivets	4.94c.
Boiler rivets	5.04c.

	Per Cent Off List
Tank rivets, 7/16 in. and smaller	55
Machine and carriage bolts, lag screws, fitting up bolts, bolt ends, plow bolts, hot-pressed nuts, square and hexagon, tapped or blank, semi-finished nuts; all quantities	65

\* No. 26 and lighter take special prices.

## PHILADELPHIA

	Base Per Lb.
*Plates, 1/4-in. and heavier	3.80c.
*Structural shapes	3.80c.
*Soft steel bars, small shapes, iron bars (except bands)	3.90c.
†Reinforc. steel bars, sq. twisted and deformed	3.42c.
Cold-finished steel bars	4.52c.
*Steel hoops	4.35c.
*Steel bands, No. 12 and 3/16 in. incl.	4.00c.
Spring steel	5.40c.
†Hot-rolled anneal. sheets (No. 24)	4.65c.
†Galvanized sheets (No. 24)	5.30c.
*Hot-rolled annealed sheets (No. 10)	3.90c.
Diam. pat. floor plates, 1/4 in.	5.45c.

These prices are subject to quantity differential except on reinforcing and Swedish iron bars.

\*Base prices subject to deduction on orders aggregating 4000 lb. or over.

†For 25 bundles or over.

‡For less than 2000 lb.

## CLEVELAND

	Base per Lb.
Plates and struc. shapes	3.86c.

Soft steel bars	3.75c.
†Reinforc. steel bars	2.60c.
‡Cold-finished steel bars	4.30c.
Hot-rolled strip, 6 in. wide and under	4.16c.
Cold-finished strip	3.60c.
Hot-rolled annealed sheets (No. 24)	4.66c.
Galvanized sheets (No. 24)	5.31c.
Hot-rolled sheets (No. 10)	3.91c.
Hot-rolled 3/16 in. 24 to 48 in. wide sheets	3.91c.
Floor plates, 3/16 in. and heavier	5.78c.
*Black ann'd wire, per 100 lb.	\$3.40
*No. 9 galv. wire, per 100 lb.	3.80
*Com. wire nails, base per keg	2.95

	Per Cent Off List
Machine and carriage bolts, small	65 and 5
Large	60 and 10
Nuts, 100 count	
1/2 in. and smaller	65 and 5
3/16 in. to 1 in.	60 and 10

†Outside delivery 10c. less.

\*For 5000 lb. or less.

‡Plus switching and cartage charges and quantity differentials up to 50c.

## CINCINNATI Base per Lb.

Plates and struc. shapes	3.95c.
Floor plates	5.55c.
Bars, rounds, flats and angles	4.05c.
Other shapes	4.20c.
Rail steel reinforc. bars	3.75c.
Hoops and bands, 3/16 in. and lighter	4.25c.
Cold-finished bars	4.50c.
Hot-rolled annealed sheets (No. 24) 3500 lb. or more	4.60c.
Galv. sheets (No. 24) 3500 lb. or more	5.25
Hot-rolled sheets (No. 10)	4.00c.
Small rivets	55 per cent off list
No. 9 ann'd wire, per 100 lb. (1000 lb. or over)	\$2.88
Com. wire nails, base per keg: Any quantity less than carload	3.04
Cement c't'd nails, base 100-lb. keg	3.50
Chain. lin. per 100 lb.	8.35

	Net per 100 Ft.
Seamless steel boiler tubes, 2-in.	\$21.80
4-in.	52.45
Lap-welded steel boiler tubes, 2-in.	20.78
4-in.	48.41

## BUFFALO Base per Lb.

Plates	3.92c.
Struc. shapes	3.80c.
Soft steel bars	3.90c.
Reinforcing bars	3.10c.
Cold-fin. flats and sq.	4.35c.
Rounds and hex.	4.35c.
Cold-rolled strip steel	3.79c.
Hot-rolled annealed sheets (No. 24)	4.80c.
Heavy hot-rolled sheets (3/16 in., 24 to 48 in. wide)	3.97c.
Galv. sheet (No. 24)	5.45c.
Bands	4.22c.
Hoops	4.22c.
Heavy hot-rolled sheets	3.97c.
Com. wire nails, base per keg	\$3.26
Black wire, base per 100 lb. (2500-lb lots or under)	4.55c.
(Over 2500 lb.)	4.45c.

## BOSTON Base per Lb.

Channels, angles	4.20c.
Tees and zees, under 3"	4.45c.
H beams and shapes	4.07c.
Plates — Sheared, tank and univ. mill, 1/4 thick and heavier	4.08c.
Floor plates, diamond pattern	6.03c.
Bar and bar shapes (mild steel)	4.20c.
Bands 3/16 in. thick and No. 12 ga. incl.	4.40 to 5.40
Half rounds, half ovals, ovals and bevels	5.45c.
Tire steel	5.45c.
Cold-rolled strip steel	3.84c.
Cold-finished rounds, squares and hexagons	4.65c.
Cold-finished flats	4.65c.
Blue annealed sheets, No. 10 ga.	3.90c.
One pass cold-rolled sheets No. 24 ga.	4.50c.
Galvanized steel sheets, No. 24 ga.	5.05c.
Lead coated sheets, No. 24 ga.	6.15c.

Price delivered by truck in metropolitan Boston, subject to quantity differentials.



## DETROIT

	Base per Lb.
Soft steel bars .....	3.94c.
Structural shapes .....	3.95c.
Plates .....	3.95c.
Floor plates .....	5.35c.
Hot-rolled annealed sheets (No. 24)* .....	4.69c.
Hot-rolled sheets (No. 10)....	3.94c.
Galvanized sheets (No. 24)*....	5.40c.
Bands and hoops .....	4.19c.
Cold-finished bars .....	4.30c.
Cold-rolled strip .....	3.78c.
Hot-rolled alloy steel (S.A.E. 3100 Series) .....	6.44c.
Quantity differential on bars, plates, structural shapes, bands, hoops, floor plates and heavy hot- rolled: Under 100 lb., 1.50c. over base; 100 to 399 lb., base plus .50c.; 400 to 3999 lb. base; 4000 to 9999 lb., base less .10c.; 10,000 lb. and over, less .15c.	

\*Under 400 lb., .50c. over base;  
400 to 1499 lb., base; 1500 to 3499 lb.,  
base less .10c.; 3500 lb. and over, base  
less .15c.

Prices delivered by truck in metro-  
politan Detroit, subject to quantity  
differentials covering shipment at  
one time.

Galvanized and hot-rolled annealed  
may not be combined to obtain quan-  
tity deductions.

## MILWAUKEE

	Base per Lb.
Plates and structural shapes..	3.86c.
Soft steel bars, rounds up to 8 in., flats and fillet angles...	3.96c.
Soft steel bars, squares and hexagons .....	4.11c.
Hot-rolled strip .....	4.21c.
Hot-rolled annealed sheets (No. 24) .....	4.71c.
Galvanized sheets (No. 24)....	5.36c.
Cold-finished steel bars .....	4.41c.
Structural rivets (keg lots)....	5.16c.
Boiler rivets, cone head (keg lots) .....	5.26c.
Track spikes (keg lots) .....	4.61c.
Track bolts (keg lots) .....	5.31c.
Black annealed wire (No. 6 to No. 9 incl.) .....	4.05c.
Com. wire nails and cement coated nails 1 to 14 kegs .....	2.25c.

	Per Cent Off List
Machine bolts and carriage bolts, ½x6 and smaller or shorter....	65
Larger and longer up to 1 in., diam. ....	60-5
1½ in. and larger .....	60
Coach and lag screws .....	60-5
Hot-pressed nuts, sq. and hex. tapped or blank, 1-199 lb.....	50
200 lb. and over:	
½ in. and smaller .....	65
9/16 to 1 in. ....	60-5
1½ in. and over .....	50-10-5

Prices given above are delivered  
Milwaukee.

On plates, shapes, bars, hot-rolled  
strip and heavy hot-rolled sheets,  
the base applies on orders of 400 to  
3999 lb. On galvanized and No. 24  
hot-rolled annealed sheets the prices  
given apply on orders of 400 to 1500  
lb. On cold-finished bars the prices  
are for orders of 1000 lb. or more of  
a size.

## ST. PAUL

	Base per Lb.
Mild steel bars, rounds .....	4.10c.
Structural shapes .....	4.00c.
Plates .....	4.00c.
Cold-finished bars .....	4.55c.
Hot-rolled annealed sheets, No. 24 .....	4.35c.
Galvanized sheets, No. 24.....	5.50c.

On mild steel bars, shapes and  
plates the base applies on 400 to  
14,999 lb. On hot-rolled sheets, gal-  
vanized sheets and cold-rolled sheets  
base applies on 15,000 lb. and over.  
Base on cold-finished bars is 1000  
lb. and over of a size.

## BALTIMORE

	Base per Lb.
Mild steel bars and small shapes	4.00c.
Structural shapes .....	3.90c.
Reinforcing bars, 5 to 15 tons.	3.16c.
Plates .....	3.90c.
Hot-rolled sheets, No. 10 .....	3.95c.
Bands .....	4.20c.
Hoops .....	4.45c.
Special threading steel .....	4.15c.
Checkered floor plates ¼ in. and heavier .....	5.80c.
Galvanized sheets, No. 24, 100 bds. or more .....	\$4.70
Cold-rolled rounds, hexagons, squares and flats, 1000 lb. and more .....	\$4.50

On plates, shapes, bars, hot-rolled  
strip and heavy hot-rolled sheets the  
base applies on orders 400 to 3999 lb.

All prices are f.o.b. consumers'  
plants.

For second zone add 10c. per 100 lb.  
for trucking.

## CHATTANOOGA

	Base per Lb.
Mild steel bars .....	4.21c.
Iron bars .....	4.21c.
Reinforcing bars .....	4.21c.
Structural shapes .....	4.11c.
Plates .....	4.11c.
Hot-rolled sheets No. 10.....	4.16c.
Hot-rolled annealed sheets, No. 24* .....	4.06c.
Galvanized sheets No. 24*.....	4.76c.
Steel bands .....	4.41c.
Cold-finished bars .....	4.86c.

\* Plus mill item extra.

## MEMPHIS

	Base per Lb.
Mild steel bars .....	4.31c.
Shapes, bar size .....	4.31c.
Iron bars .....	4.31c.
Structural shapes .....	4.21c.
Plates .....	4.21c.
Hot-rolled sheets, No. 10 .....	4.26c.
Hot-rolled annealed sheets, No. 24 .....	4.91c.
Galvanized sheets, No. 24....	5.66c.
Steel bands .....	4.56c.
Cold-drawn rounds .....	4.80c.
Cold-drawn flats, squares, hexagons .....	6.80c.
Structural rivets .....	5.15c.
Bolts and nuts, per cent off list	55
Small rivets, per cent off list	55

## NEW ORLEANS

	Base per Lb.
Mild steel bars .....	4.20c.
Reinforcing bars .....	3.24c.
Structural shapes .....	4.10c.
Plates .....	4.10c.
Hot-rolled sheets, No. 10.....	4.35c.
Steel bands .....	4.75c.
Cold-finished steel bars .....	5.10c.
Structural rivets .....	4.85c.
Boiler rivets .....	4.85c.
Common wire nails, base per keg .....	\$3.30
Bolts and nuts, per cent off list	60

## PACIFIC COAST

	San Fran- cisco	Los Angeles	Seattle
Plates, tank and U. M. ....	4.05c.	4.30c.	4.25c.
Shapes, standard	4.05c.	4.30c.	4.25c.
Soft steel bars..	4.20c.	4.30c.	4.45c.
Reinforcing bars, f.o.b. cars dock Pacific ports..	2.975c.	2.975c.	3.625c.
Hot-rolled an- nealed sheets (No. 24) .....	5.15c.	5.05c.	5.35c.
Hot-rolled sheets (No. 10) .....	4.30c.	4.50c.	4.50c.
Galv. sheets (No. 24 and lighter)	5.85c.	5.55c.	5.90c.
Galv. sheets (No. 22 and heavier)	6.10c.	5.70c.	5.90c.
Cold-finished steel Rounds .....	6.80c.	6.85c.	7.10c.
Squares and hexagons..	8.05c.	8.10c.	7.10c.
Flats .....	8.55c.	8.60c.	8.10c.
Common wire nails—base per keg less carload	\$3.65	\$3.60	\$3.70

All items subject to differentials for  
quantity.

## REFRACTORIES PRICES

### Fire Clay Brick

	Per 1000 f.o.b. Works
First quality, Pennsylvania, Maryland, Kentucky, Missouri and Illinois .....	\$54.00
First quality, New Jersey .....	56.00
Select, Ohio .....	49.00
Second quality, Pennsylvania, Maryland, Kentucky, Missouri and Illinois .....	49.00
Second quality, New Jersey....	51.00
No. 1, Ohio .....	46.00
Ground fire clay, per ton.....	3.00
5 per cent trade discount on fire clay brick, except for New Jersey, quoted at net price.	

### Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania .....	\$54.00
Chicago District .....	63.00
Birmingham .....	54.00
Silica cement per net ton (East- ern) .....	9.50
5 per cent trade discount on silica brick.	

### Chrome Brick

	Per Net Ton
Standard f.o.b. Baltimore, Plym- outh Meeting and Chester...	\$49.00
Chemically bonded f.o.b. Balti- more, Plymouth Meeting and Chester, Pa. ....	49.00

### Magnesite Brick

	Per Net Ton
Standard f.o.b. Baltimore and Chester, Pa. ....	\$69.00
Chemically bonded, f.o.b. Balti- more .....	59.00

### Grain Magnesite

	Per Net Ton
Imported, f.o.b. Baltimore* and Chester, Pa. (in sacks).....	\$45.00
Domestic, f.o.b. Baltimore and Chester, in sacks .....	43.00
Domestic, f.o.b. Chewelah, Wash.	25.00

## PIG IRON

### No. 2 Foundry

F.o.b. Everett, Mass.	\$25.75
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa., and Sparrows Point, Md.	25.00
Delivered Brooklyn	27.27
Delivered Newark or Jersey City	26.39
Delivered Philadelphia	25.76
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Buffalo, Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill.	24.00
F.o.b. Jackson, Ohio	25.75
Delivered Cincinnati	24.07
F.o.b. Duluth	24.50
F.o.b. Provo, Utah	22.00
Delivered San Francisco, Los Angeles or Seattle	\$26.50
F.o.b. Birmingham*	20.38

\* Delivered prices on southern iron for shipment to northern points are 35c. a ton below delivered prices from nearest northern basing point on iron with phosphorus content of 70 and over.

### Malleable

Base prices on malleable iron are 50c. a ton above No. 2 foundry quotations at Everett, Eastern Pennsylvania furnaces, Erie and Buffalo. Elsewhere they are the same.

### Basic

F.o.b. Everett, Mass.	\$25.75
F.o.b. Bethlehem, Birdsboro, Swedeland and Steelton, Pa., and Sparrows Point, Md.	24.50
F.o.b. Buffalo	23.00
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill.	23.50
Delivered Cincinnati	24.51
Delivered Canton, Ohio	24.76
Delivered Mansfield, Ohio	25.26
F.o.b. Jackson, Ohio	25.50
F.o.b. Birmingham	19.00

### Bessemer

F.o.b. Everett, Mass.	\$26.75
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa.	26.00
Delivered Boston Switching District	26.50
Delivered Newark or Jersey City	27.39
Delivered Philadelphia	26.76
F.o.b. Buffalo and Erie, Pa., and Duluth	25.00
F.o.b. Neville Island and Sharpsville, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago.	24.50
F.o.b. Birmingham	25.50
Delivered Cincinnati	25.51
Delivered Canton, Ohio	25.76
Delivered Mansfield, Ohio	26.26

### Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.

### Gray Forge

Valley or Pittsburgh furnace...\$23.50

### Charcoal

Lake Superior furnace...\$27.00  
Delivered Chicago...30.04

### Canadian Pig Iron

#### Per Gross Ton

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	\$26.50
No. 2 fdy., sil. 1.75 to 2.25	25.50
Malleable	26.00
Basic	25.50
Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75	\$27.50
No. 2 fdy., sil. 1.75 to 2.25	27.00
Malleable	27.50
Basic	27.00

## FERROALLOYS

### Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.	
Domestic, 80% (carload)	\$102.50

## RAW MATERIALS PRICES

### Spiegeleisen

#### Per Gross Ton Furnace

Domestic, 19 to 21%	\$33.00
F.o.b. New Orleans	33.00

### Electric Ferrosilicon

#### Per Gross Ton Delivered

50% (carloads)	\$69.50
50% (ton lots)	77.00
75% (carloads)	126.00
75% (ton lots)	136.00

### Silvery Iron

#### Per Gross Ton

F.o.b. Jackson, Ohio, 5.00 to 5.50%	\$27.50
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For each additional 0.5% silicon up to 17%. 50c. a ton is added.  
The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are \$1.25 a ton higher than at Jackson.  
Manganese, each unit over 2%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.

### Bessemer Ferrosilicon

#### F.o.b. Jackson, Ohio, Furnace

#### Per Gross Ton

10.00 to 10.50%	\$33.50
10.51 to 11.00%	34.00
11.01 to 11.50%	34.50
11.51 to 12.00%	35.00
12.01 to 12.50%	35.50
12.51 to 13.00%	36.00
13.01 to 13.50%	36.50
13.51 to 14.00%	37.00
14.01 to 14.50%	37.50
14.51 to 15.00%	38.00
15.01 to 15.50%	38.50
15.51 to 16.00%	39.00
16.01 to 16.50%	39.50
16.51 to 17.00%	40.00

Manganese 2 to 3%, \$1 a ton additional. For each unit of manganese over 3%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.

Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

### Other Ferroalloys

Ferrotungsten, per lb. contained W del. carloads	\$1.80
Ferrotungsten, lots of 5000 lbs.	1.85
Ferrotungsten, smaller lots	1.90
Ferrocromium, 4 to 6% carbon and up, 65 to 70% Cr per lb. contained Cr delivered, in carloads, and contract	10.50c.*
Ferrocromium, 2% carbon	16.50c. to 17.00c.*
Ferrocromium, 1% carbon	17.50c. to 18.00c.*
Ferrocromium, 0.10% carbon	19.50c. to 20.00c.*
Ferrocromium, 0.06% carbon	20.00c. to 20.50c.*
Ferrovandium, del. per lb. contained V	\$2.70 to \$2.90
Ferrocolumbium, per lb. contained columbium, f.o.b. Niagara Falls, N. Y.	\$2.50*
Ferrocobaltititanium, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace carload and contract per net ton	\$142.50
Ferrocobaltititanium, 17 to 20% Ti, 8 to 5% C, f.o.b. furnace, carload and contract, per net ton	\$157.50
Ferrophosphorus, electric, or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage, freight equalized with Rockdale, Tenn., per gross ton	63.50
Ferrophosphorus, electric, 24%, in carlots, f.o.b. Anniston, Ala., per gross ton with \$3 unitage, freight equalized with Nashville, Tenn.	80.00
Ferromolybdenum, per lb. Mo del.	95c.
Calcium molybdate, per lb. Mo del.	30c.
Silico spiegel, per ton, f.o.b. furnace, carloads	\$45.00
Ton lots or less, per ton	50.00
Silico-manganese, gross ton, delivered.	
3%	101.50
2.50% carbon grade	106.50
2% carbon grade	111.50
1% carbon grade	121.50

\* Spot prices are \$5 a ton higher. Spot premium on 75 per cent ferrosilicon is \$10 a ton.

## ORES

### Lake Superior Ores

#### Delivered Lower Lake Ports

#### Per Gross Ton

Old range, Bessemer, 51.50%	\$5.25
Old range, non-Bessemer, 51.50%	5.10
Mesabi, Bessemer, 51.50%	5.10

Mesabi, non-Bessemer, 51.50%	\$4.95
High phosphorus, 51.50%	4.85

### Foreign Ore

#### C.A.J. Philadelphia or Baltimore

#### Per Unit

Iron, low phos., copper free, 55 to 58% dry, Algeria, nominal	17.00c.
Iron, low phos., Swedish, average, 68% iron	Nominal
Iron, basic or foundry, Swedish, aver. 65% iron	Nominal
Iron, basic or foundry, Russian, aver. 65% iron	Nominal
Man., Caucasian, washed	52c.
Man., African, Indian	44-48% Nominal
Man., African, Indian	49-51% Nominal
Man., Brazilian, 46 to 48%	Nominal

#### Per Net Ton Unit

Tungsten, Chinese, wolframite, duty paid delivered nominal	Nominal
Tungsten, domestic, scheelite delivered	Nominal
Chrome ore (lump) c.i.f. Atlantic Seaboard, per gross ton:	
South African (low grade)	\$16.00
Rhodesian, 45%	23.00
Rhodesian, 48%	26.75
Turkish, 48-49%	25.50 to \$26.50
Turkish, 45-46%	23.50 to 24.00
Turkish, 44%	19.00 to 19.50
Chrome concentrates (Turkish) c.i.f. Atlantic Seaboard, per gross ton:	
50%	\$25.50 to \$26.50
48-49%	24.50 to 25.00

## FLUORSPAR

#### Per Net Ton

Domestic, washed gravel, 35-5, f.o.b. Kentucky and Illinois mines, all rail	\$20.00
Domestic, barge and rail	21.50
No. 2 lump, 35-5, f.o.b. Kentucky and Illinois mines	21.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid	24.50
Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2% silicon, f.o.b. Illinois and Kentucky mines	35.00

## FUEL OIL

#### Per Gal.

F.o.b. Bayonne or Baltimore, No. 3 distillate	5.25c.
F.o.b. Bayonne or Baltimore, No. 4 industrial	5.25c.
Del'd Ch'go, No. 3 industrial	4.15c.
Del'd Ch'go, No. 5 industrial	4.00c.
Del'd Cleve'd, No. 3 distillate	5.75c.
Del'd Cleve'd No. 4 industrial	5.75c.
Del'd Cleve'd No. 5 industrial	5.00c.

## COKE AND COAL

#### Coke Per Net Ton

Furnace, f.o.b. Connellsville, Prompt	\$4.35 to \$4.60
Foundry, f.o.b. Connellsville, Prompt	5.00 to 6.25
Foundry, by-product, Chicago ovens	10.25
Foundry, by-product, del'd New England	12.50
Foundry, by-product, del'd Newark or Jersey City	10.85 to 11.30
Foundry, by-product, Philadelphia	10.60
Foundry, by-product, delivered Cleveland	11.00
Foundry, by-product, delivered Cincinnati	10.50
Foundry, Birmingham	7.50
Foundry, by-product, del'd St. Louis industrial district	11.00 to 11.50
Foundry, from Birmingham, f.o.b. cars docks, Pacific ports	14.75

#### Coal Per Net Ton

Mine run steam coal, f.o.b. W. Pa. mines	\$1.50 to \$1.75
Mine run coking coal, f.o.b. W. Pa.	1.75 to 1.90
Gas coal, %-ln. f.o.b. Pa. mines	2.00 to 2.25
Mine run gas coal, f.o.b. Pa. mines	1.80 to 2.00
Steam slack, f.o.b. W. Pa. mines	1.00 to 1.25
Gas slack, f.o.b. W. Pa. mines	1.20 to 1.45





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# FABRICATED STEEL

## NORTH ATLANTIC STATES

Franklin County, Mass., 219 tons, State bridges at Colrain, Charlemont and Shelburne, to Boston Bridge Works, Inc., Cambridge, Mass.

Amherst, Mass., 120 tons, Amherst College theatre, to New England Structural Steel Co., Everett, Mass.

Newington, Conn., 174 tons, bridge, to American Bridge Co., New York.

Norwich-Lisbon, Conn., 306 tons, bridge, to Harris Structural Steel Co., Dunellen, N. J.

New York, 848 tons, Gansevoort Meat Market, to Post & McCord, New York, and American Bridge Co., New York.

New York, 218 tons, store and office building at 87th Street and Lexington Avenue, to Schacht Steel Construction Co., New York.

New York, 520 tons, addition to public school 140, to Lehigh Structural Steel Co., Allentown, Pa.

New York, 1300 tons, Flushing River bridge, to National Excavating Co., New York.

Brooklyn, N. Y., 270 tons, addition to public school 222, to Harris Structural Steel Co., Dunellen, N. J.

Long Island, N. Y., 700 tons, Creedmore hospital buildings, to Bethlehem Steel Co., Bethlehem, Pa.

Jamaica, N. Y., 190 tons, Immaculate Conception School, to Dreier Structural Steel Co., New York.

Nassau County, N. Y., 165 tons, highway bridge, to American Bridge Co., New York.

Schenectady, N. Y., 360 tons, foundry extension No. 2, American Locomotive Co., to Bethlehem Steel Co.

Syracuse, N. Y., 180 tons, crane runway, to Ingalls Iron Works Co., New York.

Deans, N. J., 165 tons, State highway bridge, to Phoenix Bridge Co., Phoenixville, Pa.

Lycoming County, Pa., 200 tons, addition to State Highway bridge, to Bethlehem Steel Co.

Harrisburg, 300 tons, Pennsylvania Railroad engine facilities, to Fort Pitt Bridge Co., Pittsburgh.

## THE SOUTH

Louisville, Ky., 320 tons, Frankfort distillery plant, to International Steel Co., Evansville, Ind.

Stone, N. C., 450 tons, First Stone River Bridge, Seaboard Air Line Railroad, to Bethlehem Steel Co.

Plymouth, N. C., 315 tons, crane runway, to Ingalls Iron Works, Birmingham.

Sumter County, Ala., 260 tons, bridge, to Virginia Bridge Co., Roanoke, Va.

Signal Mountain, Tenn., 275 tons, Alexian Hotel, to International Steel Co., Evansville, Ind.

Chickamauga, Tenn., 610 tons, embedded parts, to Lakeside Bridge & Steel Co., Duluth, Minn.

Port Everglades, Fla., 210 tons, addition to warehouse, to Tampa Shipbuilding & Engineering Co., Tampa, Fla.

## CENTRAL STATES

Toledo, 200 tons, plant extension for City Auto Stamping Co., to Whitehead & Kales Co., Detroit.

Evansville, Ind., 130 tons, addition to plant, Servel, Inc., to International Steel Co.

New Albany, Ind., 100 tons, factory addition, to Snead Architectural Iron Works, Louisville, Ky.

Elgin, Ill., 317 tons, building for McGraw Electric Co., to Mississippi Valley Structural Steel Co., Decatur, Ill.

Ottawa, Ill., 130 tons, alterations to crane runway, to Mississippi Valley Structural Steel Co.

Detroit, 200 tons, telephone exchange building, to R. C. Mahon Co., Detroit.

Detroit, 125 tons, warehouse, Chrysler Jefferson plant, to R. C. Mahon Co.

Detroit, 130 tons, garage and inspection unit, Detroit Street Railways, to Palmer-Bee Co., Detroit.

Grand Rapids, Mich., 350 tons, metal storage addition to Fisher Body division, General Motors Corp., to Jones & Laughlin Steel Corp., Pittsburgh.

Flint, Mich., 225 tons, Hamilton Avenue Bridge, Wisconsin Bridge & Iron Co., Milwaukee.

Howell, Mich., 230 tons, grade separation, to R. C. Mahon Co.

Painesville, Ohio, 1000 tons, machinery frames, for Industrial Rayon Corp., to American Bridge Co.

Cleveland, 590 tons, Lorain Avenue grade crossing elimination, to Bethlehem Steel Co.

## NEW STRUCTURAL STEEL PROJECTS

### NORTH ATLANTIC STATES

Portsmouth, N. H., 245 tons, Navy Yard; bids until Sept. 10 by Bureau of Supplies, Washington.

Newbury, Vt., 130 tons, overpass.

Farmington, Me., 125 tons, State bridge.

Lowell, Mass., 100 tons, telephone exchange addition.

South Boston, 250 tons, Westinghouse Electric & Mfg. Co., service building.

Fall River, Mass., 350 tons, Bascule Lift Span & Repairs, for State of Mass.

Providence, 125 tons, Brown University unit.

New York, 400 tons, Alexander Avenue bridge, Bronx Borough; bids due Aug. 17.

Brooklyn, N. Y., 230 tons, miscellaneous material, 33rd Street and First Avenue, United States Treasury Dept.

Vestal, N. Y., 330 tons, high school building, Board of Education.

Buffalo, 450 tons, service department building, International Harvester Co.; bids Aug. 16.

Buffalo, 100 tons, addition to Simon Brewing Co.

Elizabeth, N. J., 200 tons, Central Railroad of N. J. bridge; bids due Aug. 20.

Trenton, N. J., 5000 tons, Ternstedt plant, for Fisher Body; general contract to John McShain, Inc., Philadelphia.

Bendix, N. J., 2000 tons, Bendix Aviation Corp., to Turner Construction Co. general contractor.

Erie, Pa., 100 tons, addition to Hammermill Paper Co.

Pottstown, Pa., 300 tons, bridge, Irwin T. Stout, general contractor.

Philadelphia, 150 tons, residence, J. S. Cornell & Son, general contractor.

Bucks County, Pa., 175 tons, State highway bridge, Route 06031; bids due Aug. 20.

Center County, Pa., 100 tons, State highway bridge; bids due Aug. 27.

## THE SOUTH

Russell, Ky., 270 tons, Chesapeake & Ohio Railroad, overhead.

## CENTRAL STATES

Niles, Ohio, 300 tons, pressed glass building, General Electric Co.

Toledo, Ohio, 1200 tons, addition to factory building, Libbey Glass Co.

Newark, Ohio, 300 tons, warehouse, Owens Illinois Glass Co.

Kalamazoo, Mich., 800 tons, boiler room, Consumers Power Co.

Flint, Mich., 300 tons, Fisher Body Corp., stamping plant addition.

Bay City, Mich., 800 tons, boiler room, Consumers Power Co.

Detroit, 100 tons, theater building, Cyril Edward Schley, architect.

Detroit, tonnage unstated, traveling crane, Diesel laboratory, General Motors Corp., Albert Kahn, architect.

Marquette, Mich., 135 tons, three bridges; bids close Aug. 18.

State of Wisconsin, 200 tons, Eagle River-State Line Road; bids close Aug. 27.

St. Louis, 150 tons, Marine hospital, previously reported as 3000 tons.

## WESTERN STATES

Helena, Mont., 600 tons, bridge work.

Mare Island, Cal., 800 tons spuds and/or 3000 to 10,000 tons sheet steel piling (depending on type of construction adopted) graving dry dock for Navy Yard, Geo. Pollock Co., Sacramento, low bidder on general contract.

## FABRICATED PLATES

### AWARDS

Philadelphia, 350 tons, tanks, the Barrett Co., to Bethlehem Steel Co.

Painesville, Ohio, 600 tons, 4070 ft. of 48-in. riveted steel pipe for water intake for Industrial Rayon Corp., to Bethlehem Steel Co.

Ottawa, Ill., 150 tons, 500,000-gal. elevated tank and tower, to Graver Tank & Mfg. Co., Inc., East Chicago, Ind.

Tennessee, 160 tons, 500,000-gal. elevated tank, Chicago Bridge & Iron Co., Chicago.

Unstated location, 760 tons, 5640 ft 1/4-in. plate, 48-in. diameter pipe, to Walsh's Holyoke Steam Boiler Works, Holyoke, Mass.

Unstated location, 250 tons, 20,000 ft. steel curbing, to Eggleston Brothers & Co., Long Island City, N. Y.

## FABRICATED PLATES

### PENDING

Portsmouth, N. H., 1955 tons, Navy Yard, Bureau of Supplies, Navy Department, Washington; bids until Sept. 10.

## SHEET PILING

### AWARDS

Sundusky, Ohio, 525 tons, bearing piles for Pennsylvania Railroad, to Carnegie-Illinois Steel Corp.

## NEW PROJECTS

Erie, Pa., 250 tons, for Presque Isle work.

Bedford, Mass., 195 tons, Mystic Bridge project.

Pittsburgh, 120 tons, United States Engineers' Office.

Baltimore, Md., 290 tons, Baltimore Consolidated Gas, Electric Light & Power Co.

Frankfort, Mich., 112 tons, dock wall for Ann Arbor Railroad.

Waukegan, Ill., 1000 tons, harbor and dock project; bids Aug. 23.



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## THIS WEEK'S MACHINE ... TOOL ACTIVITIES ...

*... Foreign inquiry heavier than in many months,  
mostly for aircraft work.*

o o o

*... Business improving in some markets, particularly New York and Chicago.*

o o o

*... Trade believes demand for tools will be active  
this fall.*

### New York

AFTER a very inauspicious first week, August business in machine tools began to shape up in real volume. Commitments made in the past week came from a variety of sources, including foreign. Six machines were sold to a South American manufacturer. Foreign inquiry also is heavier than in many months, mostly for equipment for the manufacture of aircraft parts and engines. The United Aircraft Industries of the U. S. S. R. are in the market for millions of dollars' worth of American equipment; the Japanese are lining up equipment of a similar nature, and the Chinese came into the picture this week as war broke out in the Far East. By coincidence, the two leading American engine builders both began taking figures on new equipment last week, and orders are expected to follow soon. Eclipse Aviation is also asking for quotations on new equipment. Air Associates, Inc., parts makers, bought an automatic screw machine.

Most of the new orders of the week came from miscellaneous industries, however, such as the Dexter Folder Co., Pearl River, N. Y., which purchased three machines. One of the best moving lines has been sheet metal machinery. Although no railroad orders have been forthcoming recently, the outlook is better than it has been from this source. The New York Central has some inquiries out, and in the past fortnight the Erie has made separate inquiry for about 10 machines for its Hornell, N. Y., shops, the first equipment to be asked for in many years.

### Detroit

WITH buying at a standstill in the heavy equipment lines, there still is considerable clean-up work being done to get tools, gages and smaller pieces of machinery lined up for delivery. This is particularly true in programs such as those for the new Chevrolet plant at Tonawanda, N. Y.; the General Motors diesel plant and Chrysler's new engine plant in Windsor, Ont. It is reported unofficially that Ford buying for the Dagenham (England) plant has been halted without explanation. At least one order for important equipment for this plant is said to have been cancelled after it was on a manufacturer's books a week. Machine tool builders in the Detroit area are having a hard time finding enough skilled hands to man the night shift. Wage differentials, nominally 5c. an hr. for night men under most union contracts, are considerably above this in many cases, an extra premium having been found necessary to get night workers.

### Pittsburgh

ASPECTS of current business show a little change from July. Inquiries are only fair. Orders are unimpressive, being at about the same volume as last month, but dealers look for a decided pick-up in September. Quotations have been asked on a 24-in. shaper and a 42-in. x 12-ft. open side planer for shipment into Alabama. Orders for initial machine tools for Carnegie-Illinois Steel Corp.'s Irvin works have been placed recently and include some lathes, radial drills and

shapers, but contracts for the bulk of the business have yet to be closed. General Electric Co.'s Erie plant has closed for a two weeks' vacation, during which time rearrangements will be completed in several departments. The slow-up in new business has enabled factories to improve somewhat in their deliveries, and some machine tools previously promised as far ahead as five months are obtainable in three months.

### Chicago

MACHINE tool sales offices here report that business in the past week continued on the upgrade, which became definitely noticeable with the start of this month. The improvement has gained sufficient momentum, the trade generally agrees, to indicate an active fall. Deliveries, which a week ago were reported lengthened by some sellers, now are reported further extended quite generally and decidedly so by one interest. Demand from farm implement manufacturers is continuing strong. Allis-Chalmers is said to be buying for its extensive expansion program. No new industrial lists of large size are reported for the past week. Orders and inquiries for small lots of equipment, however, have shown a substantial further increase, leading sellers report.

### Cincinnati

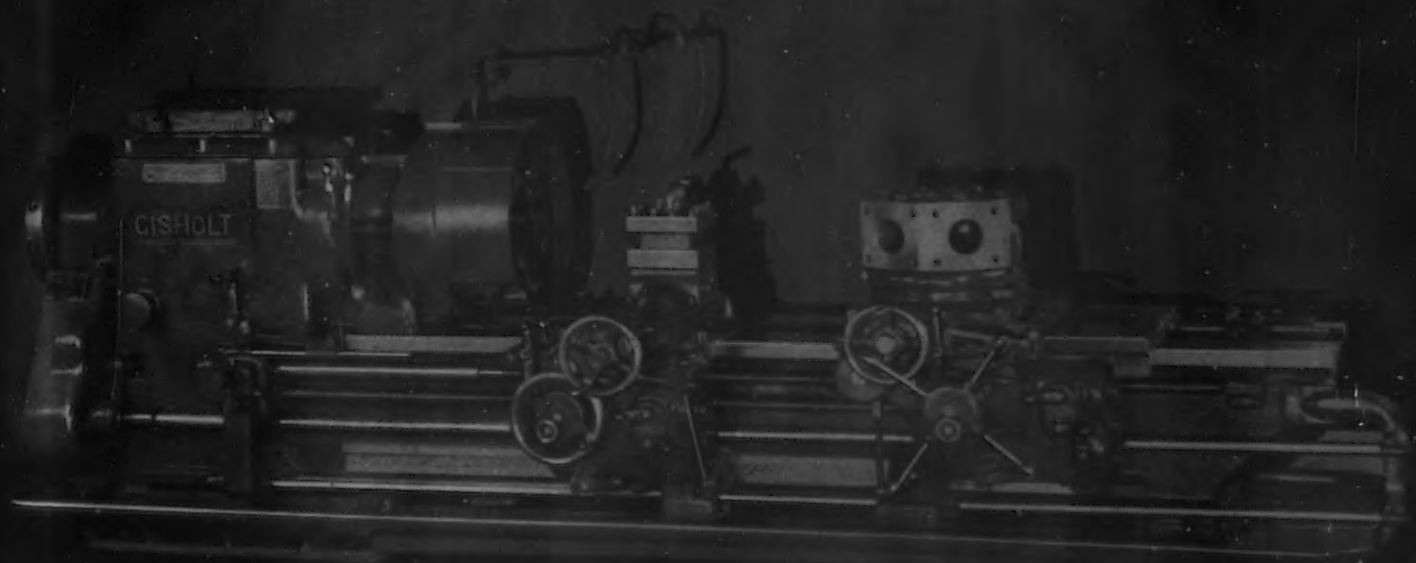
EXCEPT for a slight improvement in foreign demand, the district machine tool market was unchanged the past week. The rise in export business tended to offset a further tapering of domestic ordering, thus keeping the market on an even keel. A railroad and a manufacturer of lower priced automobiles both entered the market for light machines. Lathes, millers and broachers hold the current spotlight, although grinding machinery is reported active. Drilling tools are in a period of quietude, while heavy machinery is holding to better than average summer demand.

Easing of business, however, brings no pessimism in the face of active inquiry. Requests for quotations, all apparently sincere, are steady, and manufacturers report prospects bright. Production is about 65 per cent of factory capacities as backlogs are reduced.

### Britain Buys Plant For Armament Work

LONDON (Special Correspondence)—The big Armstrong Whitworth engineering works at Scotswood-on-Tyne has been sold to the British Government for use, it is believed, as a munitions and armaments factory. In an official statement on the sale, Vickers-Armstrong, Ltd., announced that by arrangement with the purchaser it will lease the Scotswood works and operate it as part of the Vickers establishment at Elswick.





# GISHOLT HEAVY DUTY TURRET LATHES

- 3AL** Spindle Bore  $6\frac{1}{4}$ ", Chuck 21", Swing Over Ways 27"  
**4L** Spindle Bore  $9\frac{1}{4}$ " or  $12\frac{1}{4}$ ", Chuck 24", Swing Over Ways 28"  
**5L** Spindle Bore  $9\frac{1}{4}$ " or  $12\frac{1}{4}$ ", Chuck 28" or 32", Swing Over Ways  $34\frac{1}{2}$ "

This Gisholt 5L Heavy Duty Turret Lathe is saving 33% in machining housing drums for excavators which represents saving of \$1.40 each. Further, in the machining of similar larger drums, the saving is as much as \$4.50 per drum. Production is stepped up, scheduling simplified and accuracy improved.

This Gisholt 4L Heavy Duty Turret Lathe reduced machining time 34% on these large brake drums. On an average production of 400 parts per year for each of 4 sizes, the total annual savings amounted to \$1,760. This work utilized only 50% of the machine's annual production time; the balance of which was used as profitably on other work.

## Such Records Were Made Possible By These Features— All Combined Only in Gisholt Heavy Duty Turret Lathes

Heavy, rigid machine construction with one piece bed and headstock, with extra-wide hardened steel ways, affords greatest stability and permits the use of faster cutting speeds and multiple cutting.

12 speed headstock provides proper speeds for maximum cutting.

Automatic spindle brake stops the spindle quickly without loss of time when changing pieces and also holds the spindle while chucking.

Taper roller bearing spindle mounting anti-friction bearings throughout.

Vibrationless rigid cross slide safeguards the cut-off tools and

produces highly accurate work.

6. 64 reversible leadscrew feeds permit the most efficient use of tools and the cutting of all U.S. standard threads including  $11\frac{1}{2}$ .

7. Adjustable automatic trips provided for both cross and longitudinal feeding of each carriage.

8. Separate accurate lead screws for each carriage provide powerful steady feeds and readily available means for cutting threads.

9. Cross feeding hexagon turrets with square lock gib—provide quick set up and low cost tooling for small lot work.

10. Rapid traverse independently to each carriage permits quick

positioning of the tool—eliminates manual effort.

11. Hexagon turret rigidly held by powerful toggle-operated double-bevel clamp ring—all locating parts subject to wear are hardened steel.

12. Effective automatic lubrication to all important bearings.

13. 23 gallons per minute of coolant supplied under pressure—ample for all types of work.

14. Remarkable ease and speed of operation—all controls are centrally located and easily handled.

15. Gisholt Turret Lathes are equipped with Gisholt chucks, extra attachments and small tools that admirably adapt them to each manufacturer's work.

## SEND FOR THIS NEW CATALOG

Now ready—this new catalog on these improved Gisholt Heavy Duty Turret Lathes. Your copy is waiting for you. Send for it today.



## GISHOLT MACHINE COMPANY

1215 EAST WASHINGTON AVENUE, MADISON, WISCONSIN, U. S. A.  
TURRET LATHES • AUTOMATIC LATHES • TOOL GRINDERS • BALANCING MACHINES



# PLANT EXPANSION AND EQUIPMENT BUYING

## ◀ NORTH ATLANTIC ▶

**Schenley Distillers Corp.**, 20 West Fortieth Street, New York, has let general contract to Frank Messer & Sons, Inc., 2515 Burnet Street, Cincinnati, for three-story and basement mechanical-bottling unit, 82 x 260 ft., to plant of Bernheim Distilling Co., Louisville, a subsidiary. Cost over \$150,000 with equipment. Carl J. Kiefer, Schmidt Building, Cincinnati, is engineer.

**American Cyanamid & Chemical Corp.**, 30 Rockefeller Plaza, New York, affiliated with American Cyanamid Co., same address, has asked bids on general contract for one-story plant unit, 40 x 260 ft., at Panama City, Fla., for storage and distribution. Cost over \$85,000 with equipment. Company will also build a similar unit at Valdosta, Ga., to cost close to like amount.

**American Commercial Steel Co.**, 186 Joralemon Street, Brooklyn, has leased one-story building at 36-33 Van Alst Avenue, Long Island City, for new storage and distributing plant.

**National Container Corp.**, Long Island City, N. Y., manufacturer of corrugated shipping boxes and containers, has let structural steel contract for new kraft pulp and paperboard mill at Jacksonville, Fla. Merritt-Chapman & Scott Corp., 17 Battery Place, New York, is general contractor. Cost \$3,500,000 with machinery. Company recently has concluded financing for project.

**Bakelite Corp.**, 247 Park Avenue, New York, manufacturer of molded insulation products, has let general contract to M. T. Pedersen & Sons, 280 Hobart Street, Perth Amboy, N. J., for one-story addition to plant at Bound Brook, N. J. Cost close to \$60,000 with equipment. Award has been made to Laurence C. Roberts, Inc., 10 East Fortieth Street, for one-story addition to branch plant at Bloomfield, N. J., including improvements in present structures, to cost approximately a like amount. Francisco & Jacobus, 511 Fifth Avenue, New York, are architects and engineers.

**City Island Boat Building Corp.**, Marine Street, City Island, Bronx, New York, has filed plans for one-story building, 100 x 300 ft., in part for storage and distribution. Anton Pirner, 3135 Willow Lane, Bronx, is architect.

**Fyfe's Shipyard, Inc.**, Glen Cove, L. I., plans rebuilding one-story main machine shop at shipbuilding plant, recently destroyed by fire.

**General Aniline Works, Inc.**, 435 Hudson Street, New York, manufacturer of industrial chemicals, colors, dyes, etc., has let general contract to White Construction Co., 95 Madison Avenue, for two additions, one and multi-story, to plant at Grasselli, N. J., one unit for general manufacturing and other for operating and executive division. Cost over \$400,000 with equipment.

**Commanding Officer, Ordnance Department, Picatinny Arsenal, Dover, N. J.**, asks bids until Aug. 23 for galvanized steel carriage bolts (Circular 62).

**Carrier Corp.**, 550 Frelinghuysen Avenue, Newark, N. J., manufacturer of air-conditioning equipment, has let general contract to Austin Co., Cleveland, for modernization and improvements in four and five-story plant at Syracuse, N. Y., formerly property of Franklin Automobile Co. Cost over \$400,000 with equipment.

**World Bestos Corp.**, 52 Cortland Street, Paterson, N. J., manufacturer of automobile brake linings, radio tubes and equipment, plans rebuilding part of plant

recently destroyed by fire. Loss close to \$50,000 including equipment.

**Akron Sanitary Mfg. Co.**, Roosevelt and Southard Streets, Trenton, N. J., manufacturer of sanitary ware, recently organized and operating at former plant of Sanitary Earthenware Specialty Co., has plans for two-story and basement addition, 100 x 600 ft. Cost over \$350,000 with equipment. Maurice H. Finkel, 156 West Forty-fourth Street, New York, is architect.

**Robert M. Hadley Mfg. Co.**, 709 East Sixty-first Street, Los Angeles, manufacturer of electrical transformers and parts, has acquired one and one-half acres on South Chapel Street, Newark, Del., for one-story eastern branch plant, primarily for assembling, for which superstructure will begin in September. Cost close to \$50,000 with equipment.

## ◀ BUFFALO DISTRICT ▶

**United States Engineer Office, Federal Building, Buffalo**, asks bids until Aug. 27 for valves, steel radiator hangers, brass radiator shields, etc. (Circular 14); until Aug. 28, one portable testing generator unit (Circular 15); until Sept. 3, one oil-burning boiler unit (Circular 13); until Sept. 7, one sewerage pumping unit and accessories (Circular 16).

**Pierce-Arrow Motor Car Corp.**, 1695 Elmwood Avenue, Buffalo, plans remodeling part of plant, including retooling and installation of equipment for new model automobile in popular-priced field. Financing in amount of \$11,000,000 is being arranged through sale of new stock, part of fund to be used for purpose noted.

**Board of Education, City Hall, Buffalo**, asks bids until Aug. 24 for 10 pedestal motor-drives for McKinley vocational high school, as per specifications at Bureau of School Architecture, address noted.

## ◀ NEW ENGLAND ▶

**Eastern Tool & Stamping Co.**, Ballard Street, Saugus, Mass., manufacturer of sheet metal stampings, dies, etc., has let general contract to Arlington Construction Co., Arlington, Mass., for two-story addition, 67 x 70 ft., and one-story boiler house. Cost over \$50,000 with equipment.

**Commanding Officer, Ordnance Department, Springfield Armory, Springfield, Mass.**, asks bids until Aug. 24 for 800 pairs 3-in. vise jaw caps (Circular 9).

**Scovill Mfg. Co.**, Waterbury, Conn., manufacturer of metal products, brass and wire goods, etc., has acquired plant and business of Vulcanite Mfg. Co., Lindenhurst, N. Y., manufacturer of snap fasteners and kindred products. Plant will be discontinued, and part of machinery transferred to plant of Oakville Co. Division of purchasing company at Waterbury, where production will be increased.

**Charles H. Pine Manual Training School, Ansonia, Conn.**, has plans for two-story addition, 56 x 117 ft. Cost close to \$50,000 with equipment. Brown & Von Beren, New Haven, Conn., are architects.

**Dewey & Almy Chemical Co.**, 52 Whittemore Avenue, Cambridge, Mass., has let general contract to L. C. Blake, 50 Dyer Avenue, Milton, Mass., for two one-story and basement additions, 20 x 100 ft., and 25 x 45 ft., respectively. Cost about \$50,000 with equipment.

## ◀ WASHINGTON DIST. ▶

**Constructing Quartermaster, Munitions Building, Washington**, asks bids until Aug.

23 for 63,000 sq. ft. of electrically-welded wire mesh reinforcement (Circular 4).

**Board of Baltimore County Commissioners, Towson, Md.**, Samuel A. Green, chairman, asks bids until Aug. 23 for two 300,000-gal. elevated steel tanks and towers, for erection at Pleasant Hill and Reisterstown, respectively.

**General Purchasing Officer, Panama Canal, Washington**, asks bids until Aug. 23 for 48 metal-cutting hand saws, railroad track chisels, steel wire wheel brushes, two 50-gal. oil burner melting kettles, galvanized flanged unions, brass or bronze unions, oxygen-cylinder valves, angle valves, cross valves, etc. (Schedule 3280); until Aug. 26, 78,000 ft. rubber-insulated wire, 3000 ft. rubber-insulated cable, 24,630 ft. copper cable for power transmission, 20,000 ft. weatherproof wire, two 60-gal. melting kettles with hoisting attachments and oil burners, cast iron lamp post parts, lamp post shafts and bases, transformers, panelboards, switches and other equipment (Schedule 3279).

**Bureau of Yards and Docks, Navy Department, Washington**, asks bids (no closing date stated) for one diesel-electric power unit, including 325-hp. engine and 200-kw. generator, for floating crane at Norfolk Navy Yard, Portsmouth, Va. (Specifications 8545).

**Seven-Up Bottling Co. of Baltimore, Catonsville, Md.**, has let general contract to Frederick S. Pfeiffer, 530 Poplar Grove Street, for one-story addition to mechanical-bottling plant. Cost close to \$30,000 with equipment.

**Bureau of Supplies and Accounts, Navy Department, Washington**, asks bids until Aug. 24 for one double-acting steam pile hammer, complete with driving cups and pulling rig (Schedule 1449) for Sewall's Point; one combination 14 and 16-in. honing head (Schedule 1398) for Washington yard; one motor-driven throatless shear (Schedule 1433) for Indian Head station; until Aug. 27, tools for horizons, directional gyroscopes and automatic airplane pilots (Schedule 900-1041) for Eastern and Western yards.

## ◀ SOUTH ATLANTIC ▶

**Miller Machinery & Supply Co.**, 126 N. E. Twenty-seventh Street, Miami, Fla., has plans for one-story and basement plant, 115 x 140 ft., for storage and distribution. Cost about \$40,000 with equipment. W. T. Eefting, 2227 N.W. Fifty-first Terrace, is engineer.

**Florida Pipe & Supply Co.**, 829 Myrtle Avenue, Jacksonville, Fla., has let general contract to S. S. Jacobs, Hildebrandt Building, for two-story addition for storage and distribution, with pipe cutting and fitting division. Cost close to \$45,000 with equipment.

**Thomson Coca-Cola Bottling Co., Thomson, Ga.**, will soon take new bids on revised plans for one-story addition to mechanical-bottling works. Cost over \$35,000 with equipment. Francis P. Smith, Norris Building, Atlanta, Ga., is architect.

## ◀ SOUTH CENTRAL ▶

**National Gypsum Co.**, 190 Delaware Avenue, Buffalo, has acquired site at Mobile, Ala., for new plant, with machine shop, power house and other mechanical departments. Cost over \$1,500,000 with equipment.

**United States Engineer Office, Vicksburg, Miss.**, asks bids until Aug. 25 for 21,000 lin. ft. plow steel wire rope, 2 1/2 to 1 3/4-in. (Circular 19).

**Hemstead Oil & Storage Co.**, Mobile, Ala., has approved plans for extensions in bulk oil terminal in Choctaw Point district, including one-story building, installation of one 20,000-bbl. steel tank, and two 10,000-bbl. each, extensions in pumping station, including equipment, and other work. Cost close to \$45,000.

**Town Council, Abbeville, La.**, will take bids soon for extensions in municipal electric power plant, including 1000-hp. engine-generator unit and accessories. Cost about \$50,000. A. J. Frank, superintendent of water and light plant, is in charge.

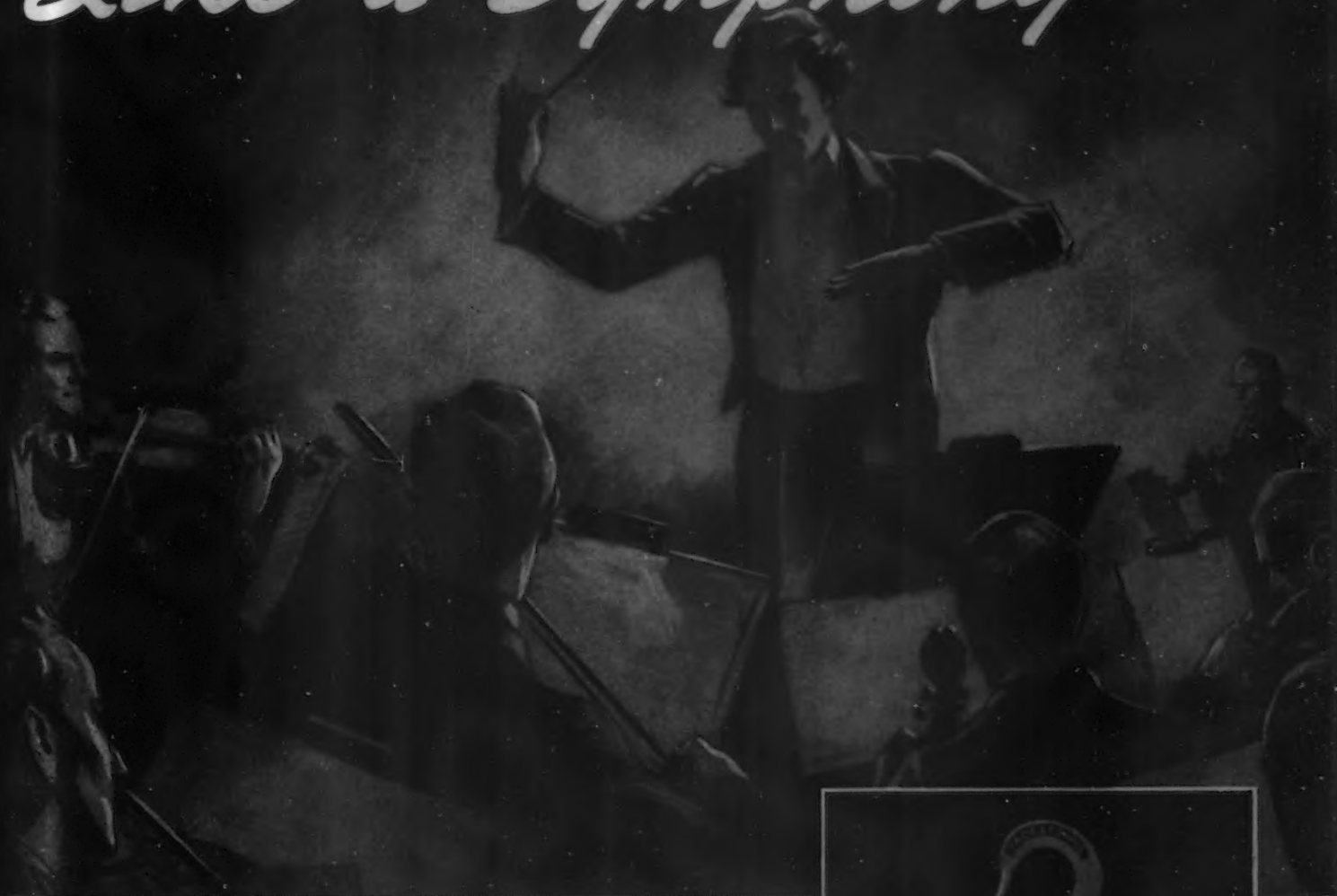
## ◀ SOUTHWEST ▶

**Falstaff Brewing Corp.**, 8684 Forest Park Boulevard, St. Louis, has asked bids on general contract for multi-story addition, primarily for storage and distribution. Cost over \$80,000 with equipment. Janssen & Janssen, Chemical Building, are architects.

**Common Council, Goodland, Kan.**, asks



# Like a Symphony—



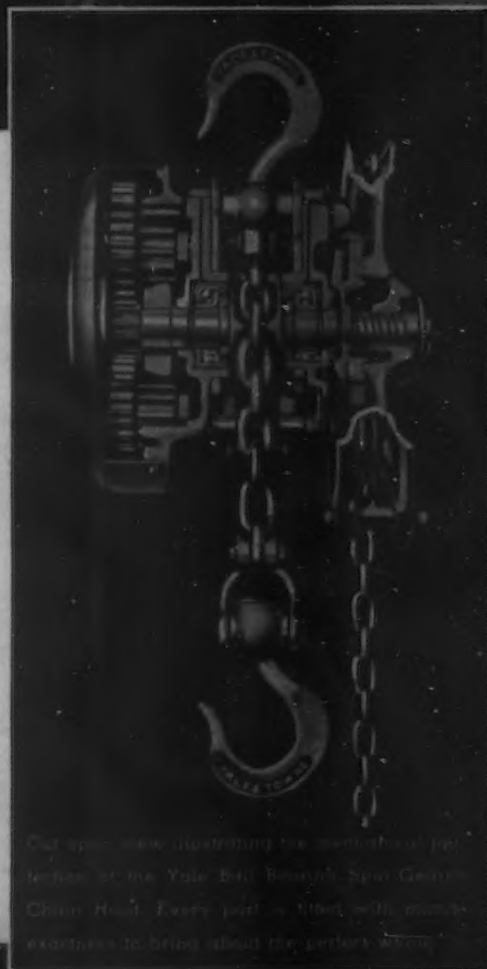
## THE HARMONIOUS PRECISION OF A YALE CHAIN HOIST

Thousands of music lovers every year listen enraptured under the spell of the baton. Music wells in glorious waves of sound from the instruments of hundreds of men, who play as one. Every man but a cog in the machine, working towards the perfectly balanced, harmonized whole.

And that's the story of Yale success. Every part in a Yale Chain Hoist is but a cog in the machine—working towards the perfectly precise—faultlessly finished whole.

Steel Safety Hooks . . . Suspension Plates . . . Steel Driving Pinions . . . Steel Load Chain—Each and every part illustrates the solidity, forethought and engineering skill that is synonymous with the name Yale. From hook to hook a line of steel—Subject any or all of them to microscopic observation, and you'll soon appreciate why Yale is Tops in Hoists! Any Yale distributor will be glad to tell you all about it. It will pay you to have him call.

Capacities: 300 lbs. to 40 tons.



Get your new illustrating for identification purposes at the Yale Ball Bearing Spin Gear Chain Hoist. Every part is fitted with machine exactness to bring about the perfect fit.

# YALE MARK

THE YALE & TOWNE MANUFACTURING COMPANY,  
PHILADELPHIA DIVISION, PHILADELPHIA, PA.  
IN CANADA: ST. CATHARINES, ONT.

bids until Aug. 25 for new municipal electric light and power plant, including engine-generator units and auxiliary equipment; also for an electrical distributing system. Cost about \$200,000 with equipment. Financing has been arranged through Federal aid. E. T. Archer & Co., New England Building, Kansas City, Mo., are consulting engineers.

**Crow-Burlingame Co.**, Fourth and Spring Streets, Little Rock, Ark., operating a machine shop, has acquired building at Capitol Avenue and Arch Street, and will remodel to specialize in automotive parts and repairs.

**Continental Oil Co.**, Ponca City, Okla., has plans for new natural gasoline plant in Billings oil field, Noble County, Okla., with power house and compressor station. Pumping station and steel tank storage and distributing facilities will be installed. Cost about \$250,000.

**Commanding Officer, Ordnance Department**, San Antonio Arsenal, San Antonio, Tex., asks bids until Sept. 2 for one high-speed, motor-driven power hacksaw, with tools and accessories (Circular 3).

**Standard Brass & Mfg. Co.**, 1015 North San Jacinto Street, Houston, Tex., has let general contract to Seymour Construction Co., Houston, for new plant at Franklin and South Emanuel Street, comprising two one-story units, about 100 x 100 ft. for general production, and storage and distribution, respectively. Cost close to \$50,000 with equipment. John F. Staub, 4301 Main Street, is architect.

**Coca-Cola Bottling Co.**, 650 South Main Street, Fort Worth, Tex., has plans for one-story mechanical-bottling plant, 50 x 200 ft. Cost about \$45,000 with equipment. Preston M. Geren, 806 Burnett Street, is architect; R. K. Werner, Waggoner Building, is mechanical engineer.

## ◀ WESTERN PA. DIST. ▶

**Aluminum Co. of America, Inc.**, Gulf Building, Pittsburgh, will begin superstructure for one-story addition to branch plant at Massena, N. Y., including improvements in present works, for which general contract recently was let to Brown & Hands Construction Co., Inc., 108 Dorothy Street, Syracuse, N. Y. Cost over \$150,000 with equipment.

**Pennsylvania Power Co.**, Youngstown, Ohio, has let general contract to J. A. Utley, 6031 Mansur Street, Detroit, for new steam-electric generating plant on Beaver River, West Pittsburgh. Cost about \$3,000,000 with turbo-generators, high-pressure boilers and auxiliary equipment. Company will make extensions in transmission lines in this district.

## ◀ MICHIGAN DISTRICT ▶

**Motor Wheel Corp.**, East Saginaw Street, Lansing, Mich., automobile wheels, heavy metal stampings, etc., has approved plans for two one-story additions, for production of brake drums and for brake assembling, respectively, work on first unit to begin at once and second structure early in fall. Both structures will total about 90,000 sq. ft. floor space. Cost about \$250,000 with equipment.

**City Council, Lansing, Mich.**, will take bids soon for addition to municipal electric light and power plant, installation to include turbo-generator unit with accessories, boilers, pumps and other equipment. Cost about \$2,700,000. Bowd & Munson, are architects, and Claude Erickson, engineer, both Lansing.

**Pontiac Motor Co.**, Pontiac, Mich., has let general contract to Darin & Armstrong, Inc., New Center Building, Detroit, for one-story addition to building No. 9. Cost over \$85,000 with equipment. Albert Kahn, Inc., New Center Building, is architect and engineer.

## ◀ OHIO AND INDIANA ▶

**Bevis Machine Co.**, Water Street, Middletown, Ohio, manufacturer of machinery and parts, will take bids soon on revised plan for one-story machine shop, 75 x 90 ft. Cost about \$45,000 with equipment. Pretzinger & Pretzinger, Reibold Building, Dayton, Ohio, are architects.

**Wellman Bronze & Aluminum Co.**, 6017 Superior Avenue, Cleveland, manufacturer of castings, bushings, bearings, etc., has plans for one-story addition to double approximately present floor space. Cost close to \$100,000 with equipment. Company recently arranged financing to total about \$159,500 for this and other operations.

**Hoban Brass Foundry Co.**, 44 Wyandot Street, Dayton, Ohio, will take bids soon on general contract for one-story foundry addition. Cost close to \$35,000 with equipment. Frank J. Wise, 48 Burns Avenue, is architect.

**Electric Auto Lite Co.**, Champlain and Mulberry Streets, Toledo, Ohio, has let general contract to A. Bentley & Sons Co., 201 Belmont Street, for one-story plant addition, 100 x 200 ft. Cost over \$125,000 with equipment.

**Contracting Officer, Material Division, Army Air Corps, Wright Field, Dayton, Ohio**, asks bids until Aug. 23 for 290 automatic center punches, 825 center punches, 96 cutting punches, 8000 drive pin punches and 750 drive pin solid punches (Circular 85), blacksmiths', machinists', carpenters' and tinners' hammers (Circular 88), 4350 running lamp assemblies, and 2266 running lamp reflectors (Circular 74), 20 engine-driven hydraulic pump assemblies (Circular 87), one three-unit starter assembly (Circular 86); until Aug. 30, gear assemblies, clevis, bolts, nuts, cone and pedal assemblies (Circular 82); until Aug. 31, gage assemblies and wrench assemblies (Circular 81).

**Sunbeam Electric Mfg. Co.**, 225 West Morgan Street, Evansville, Ind., manufacturer of automobile headlights and kindred lighting equipment, will take bids soon on general contract for three-story addition, 54 x 165 ft., and one-story, 115 x 145 ft. Cost close to \$250,000 with equipment. Edwin C. Berendes, 121 N.W. Fourth Street, is architect.

## ◀ MIDDLE WEST ▶

**Tropic-Aire, Inc.**, 60 Eleventh Avenue, N.E., Minneapolis, automobile heaters and parts, has plans for two-story and basement branch plant at Kilbourne Avenue and Augusta Boulevard, Chicago. Cost close to \$200,000 with equipment. Victor L. Charn, 664 North Michigan Avenue, Chicago, is architect.

**Elgin Softener Co.**, 57 North Street, Elgin, Ill., manufacturer of water-softening equipment, parts, etc., has asked bids on general contract for one and two-story addition. Cost about \$35,000 with equipment. George E. Morris, Sherwin Building, is architect.

**Harrington & King Perforating Co.**, 5655 Fillmore Street, Chicago, manufacturer of perforated metals, expanded metal products, etc., has let general contract to Campbell-Lowrie-Lautermilch Corp., 400 West Madison Street, for one-story plant unit, 65 x 285 ft. Cost over \$85,000 with equipment.

**City Council, Adrian, Minn.**, plans installation of diesel engine-generator unit and auxiliary equipment in municipal electric power plant. Fund of \$30,000 has been authorized for work. Druar & Milnowski, Globe Building, St. Paul, Minn., are consulting engineers.

**Barber-Colman Co.**, 150 Loomis Street, Rockford, Ill., manufacturer of milling cutters, reamers, hobbing machines and kindred cutting tools, has let general contract to Security Building Co., 717 East Jefferson Street, for four-story addition, 28 x 50 ft. Ward R. Shedd is company engineer.

**Viking Pump Co.**, Cedar Falls, Iowa, manufacturer of pumping machinery and parts, has let general contract to George Pepin, 216 West Fourteenth Street, for one-story addition, 32 x 96 ft.

**Snap-In Tools, Inc.**, Kenosha, Wis., manufacturer of tool kits for automobiles, garage tools, etc., has established branch unit in Mt. Carmel, Ill., with 2500 sq. ft. of floor space. William Enders, superintendent of main works for several years, is general manager of new factory.

**Van Brunt Mfg. Co.**, Horicon, Wis., manufacturer of grain drills and other horse-and-tractor-drawn farm machinery, is starting work on addition, 80 x 110 ft., to gray iron foundry, costing about \$45,000 with equipment and increasing shop capacity 20 per cent.

**Brillion Iron Works, Inc.**, Brillion, Wis., manufacturer of foundry equipment, hand cranes, pouring devices, gray iron castings, etc., has broken ground for foundry addition, 60 x 135 ft., mainly for core-room purposes.

**Clark County Electric Co-Operative**, Wallace J. Jandry, Neillsville, Wis., secretary, has accepted bid of Olen Contracting Co., Lebanon, Ind., for 695 miles of electric transmission lines under REA at price of \$578,910. E. B. Ways, 314 Tenney Building, Madison, Wis., is chief engineer of WRECA.

## ◀ PACIFIC COAST ▶

**J. I. Case Co.**, Twentieth and Peralta Streets, Oakland, Cal., farm implements and equipment, with main plant at Racine, Wis., has let general contract to H. J. Christensen Co., 1955 Webster Street, Oakland, and W. E. Lyons Construction Co., 2009 Pacific Avenue, Alameda, Cal., for one-story plant addition. Cost over \$50,000 with equipment.

**Saticoy Lemon Association**, Montalvo, Cal., will take bids soon for two additions to fruit-packing plant, one-story, 126 x 170 ft., and two-stories, 155 x 210 ft., for expansion in packing division, and storage and distributing department, respectively. Cost over \$100,000 with conveyers, loaders and other mechanical-handling equipment. Roy C. Wilson, Santa Paula, Cal., is architect.

**Bureau of Reclamation**, Denver, asks bids until Aug. 24 for one 125-gal. per min. motor-driven vertical shaft turbine pumping unit, and for six motor-driven vertical centrifugal, submerged type sump pumps, each 200-gal. per min., for Imperial Dam and desilting works, All-American Canal System, Boulder Canyon Project (Specifications 957-D); until Aug. 25, five vertical motor-driven pumping units of various capacities for same project (Specifications 958-D).

**Procter & Gamble Co.**, Long Beach, Cal., soaps, washing powders, cleansers, etc., plans additions to double present capacity. Cost close to \$1,000,000 with machinery. Main offices of company are in Cincinnati.

**United States Engineer Office**, Bonneville, Ore., asks bids until Sept. 2 for two 1½-ton gantry cranes with lifting beams and three loading skips (Circular 38).

**Northrop Co.**, El Segundo, Cal., manufacturer of airplanes and parts, has let general contract to E. S. McKittrick Co., 5905 Pacific Boulevard, Huntington Park, Cal., for one-story addition. Cost about \$25,000 with equipment. Company will award another contract soon for a larger one-story extension.

**Bureau of Supplies and Accounts**, Navy Department, Washington, asks bids until Aug. 27 for parts for airplanes (Schedule 900-1049) for San Diego Naval Station.

## ◀ FOREIGN ▶

**Department of Government Railways**, Melbourne, Victoria, Australia, asks bids until Dec. 22 for two steam boilers and auxiliary equipment, and one turbo-alternator unit and accessories.

**Celulosa Argentina, Ltd.**, Buenos Aires, Argentina, manufacturer of newspaper and other paper products, cellulose materials, plans several one and multi-story additions to mill. Company is arranging for increase in capital from 5,000,000 to 30,000,000 pesos (about \$1,700,000 to \$10,200,000), considerable part of proceeds to be used for purpose noted.

**McKinnon Industries, Ltd.**, Ontario Street, St. Catharines, Ont., manufacturer of welded and other steel chains, and kindred mechanical products, has plans for one-story addition, 35 x 140 ft. Cost close to \$60,000 with equipment. Company is affiliated with Columbus McKinnon Chain Corp., Tonawanda, N. Y.

## TRADE NOTES

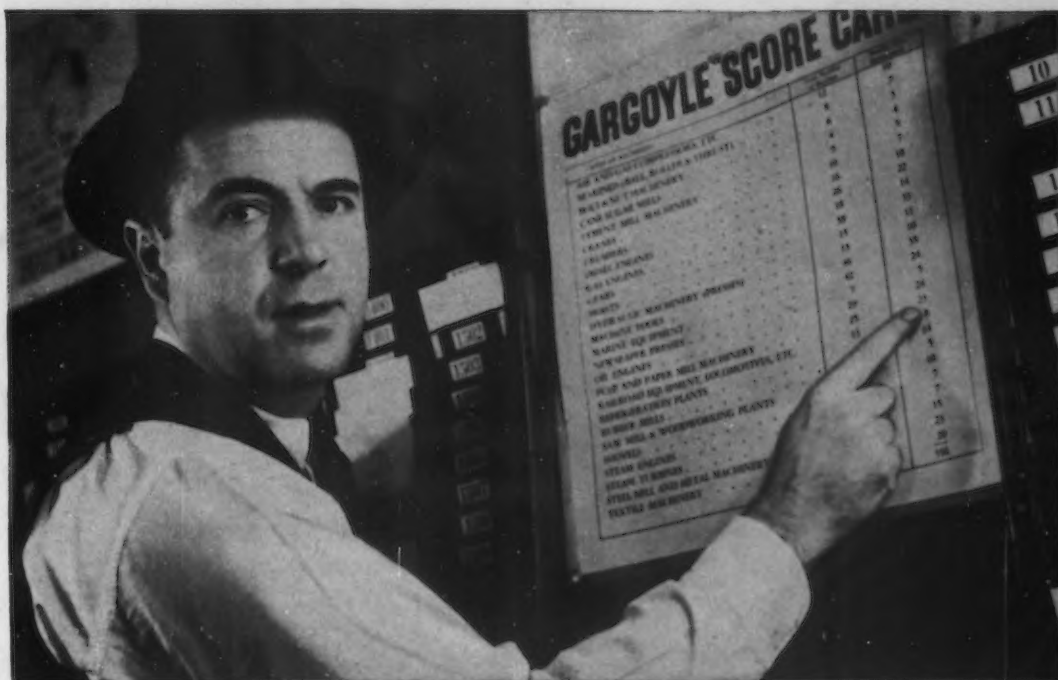
**Motor Improvements, Inc.**, Newark, N.J., manufacturer of automotive and industrial filters, has added to the capacity of its assembly and lacquering lines by installing additional lines at 671 Frelinghuysen Avenue, Newark.

Four new distributors for Republic's tubular products have been announced by N. J. Clarke, vice-president in charge of sales of **Republic Steel Corp.**, Cleveland. They are: Bluefield Supply Co., Bluefield, W. Va.; Ormand Plumbing Supply Co., San Antonio, Tex.; J. Gaber Co., Houston, Tex., and Morgan's Inc., Savannah, Ga. The complete range of tubular products, including Republic steel merchant pipe and Toncan iron pipe, will be distributed by these firms.



# ONLY OIL IN THE WORLD THAT CARRIES THIS OKAY...

Approved or Recommended by 80% of all  
Machinery Builders...



IT IS EXTREMELY significant that with all the good lubricants available today, only Gargoyle Lubricants carry the recommendation and approval of 80% of this country's leading machine builders.

Here's assurance of quality and lubricating efficiency that protects capital investments... makes machines work better and produce faster... reduces friction and power loads... curbs maintenance and "idle" time... lowers

annual cost of plant lubrication.

Hundreds of thousands of machinery users, in 110 different industries, agree that on matters of lubrication the word of the machine builder is important. That's why it may be profitable for your capable plant staffs and Socony-Vacuum engineers to work together... solving individual operating problems... gaining increased manufacturing profits easily measured in dollars and cents.

**SOCONY-VACUUM**  
INDUSTRIAL LUBRICATION



**SAVES  
MONEY  
FOR  
INDUSTRY**

Read what 71 Years of Lubricating Experience in the Oil Business can do for You. See Next Page.

# THIS MARKETING POLICY MEANS "CORRECT LUBRICATION" FOR EVERY TYPE OF PLANT

---

INDUSTRY ALMOST ALWAYS FINDS that the controlled use of high-grade Gargoyle Lubricants pays for itself many times over and that they actually cost less to use than ordinary lubricants.

But, for such equipment as does not justify the highest-grade lubricants, Socony-Vacuum Engineers will always recommend a lower-priced lubricant when consistent with true economy.

Socony-Vacuum, with a complete line of products, can supply the lubricants best fitted for the requirements of the individual lubricating job as determined by specific operating conditions.

Socony-Vacuum Engineers bring you years of world-wide experience and direct cooperation with manufacturers of equipment. Lubrication Profit is the inevitable result.



SEND FOR THE SOCONY-VACUUM REPRESENTATIVE: *The services of a trained Socony-Vacuum Engineer are available at all times in helping your men to solve lubrication problems.*

## SOCONY-VACUUM OIL Co.

INCORPORATED

STANDARD OIL OF NEW YORK DIVISION · WHITE STAR DIVISION · LUBRITE DIVISION · WHITE EAGLE DIVISION  
WADHAMS OIL COMPANY · MAGNOLIA PETROLEUM COMPANY · GENERAL PETROLEUM CORPORATION OF CALIFORNIA





# New Industrial Literature

REVIEW OF CURRENT CATALOGS AND LITERATURE • A TIME SAVING SERVICE FOR THE ENGINEER

**INDICATING AND RECORDING INSTRUMENTS.**—C. J. Tagliabue Mfg. Co. Catalog No. 1060 C, newly issued, containing complete information, including prices, on Tag indicating, recording and controlling instruments. Illustrations show interior construction and typical applications. Bulletin 8-59.

**PIPE FITTINGS.**—E. M. Dart Mfg. Co. Complete data on pipe unions and fittings are presented in this catalog, also, descriptions of precision operations, materials and methods of inspection used in manufacturing. Dart unions are included. Bulletin 8-60.

**CARBIDE TOOL BLANKS.**—Vanadium-Alloys Steel Co. New catalog of tools and blanks containing much valuable information for tool makers using carbide blanks and machine shops using tools tipped with these blanks. Bulletin 8-61.

**LIGHT DRILLING MACHINE.**—High Speed Hammer Co., Inc. Circular giving information on drilling machine for light manufacturing, tool room or model making use, with capacity up to  $\frac{1}{4}$  in. Pulley drives quill directly and is said to eliminate belt tension on spindle and give sensitive feel to operator. Bulletin 8-62.

**VERTICAL MILLER-SHAPER.**—Cochrane-Bly Co. Bulletin covering No. 14 Universal miller-shaper that can be used for drilling, boring, milling and shaping of work in vertical or horizontal position with one setting of work. Bulletin 8-63.

**CONTOUR SAWING.**—Continental Machine Specialties, Inc. Unusual handbook containing information on internal and external filing and sawing. Includes examples of contour sawed work performed by its Doall machine which can also be equipped for polishing. Semi-automatic saw welding equipment is built-in on several models. Handbook will prove of especial interest to die and jig makers. Bulletin 8-64.

**INDUSTRIAL BUILDINGS.**—Albert Kahn, Inc. A brief resume of the requirements of modern industrial buildings, followed by a number of photographs of plants built by the corporation, are presented in a bound volume. Bulletin 8-65.

**SILENT CHAIN DRIVES.**—Morse Chain Co. Bulletin No. 49, just published, contains 20 pages of detailed information on the application, construction and maintenance of silent drive chains. Also includes directions for cutting sprockets, typical layouts for idlers and shoes and data on chain cases. Bulletin 8-66.

**SWITCHGEAR EQUIPMENT.**—General Electric Co. Booklet designed as a convenient source of information on switchgear, as, air and oil circuit breakers, outdoor and indoor switches, relays, etc. Bulletin 8-67.

**STEAM PIPE FLANGE BOLTS.**—Hadfields Ltd. Bulletin describes use of chrome-moly steel in steam pipe flange bolts.

Great stability in service and high resistance to creep are claimed for this alloy. Charts show tensile and creep test results. Bulletin 8-68.

**ARC WELDING.**—Hobart Bros. Circular describes portable welding machine with selective horsepower control that is claimed to cut current costs 30 to 50 per cent. Bulletin 8-69.

**CULVERTS.**—U. S. Steel Corp. Subsidiaries, "How To Buy Culverts" is the title of this 24-page booklet which is intended as a reference source for highway, railroad and other construction engineers, and describes small round, part circle and perforated culverts. Engineering tables included. Bulletin 8-70.

**MAGNETIC SEPARATORS.**—Stearns Magnetic Mfg. Co. Two folders, one describing separating equipment suitable for foundry sand reclamation, and another illustrating the construction and operating characteristics of a separator for treating fine dry material. Bulletin 8-71.

**METAL CUTTING.**—Henry Disston & Sons, Inc. A series of data books are available covering the selection and care of hack saw blades, band saws and inserted tooth saws. Exceptionally comprehensive material explains all the phases of metal cutting, pointing out correct and incorrect methods. Will be of particular interest to all metal working plants. Bulletin 8-72.

**JIG BORER.**—Moore Special Tool Co. Catalog describes a small jig borer designed for accuracy and high speed in boring holes in jigs, dies, etc., and is illustrated with photographs showing construction features of machine and examples of work performed with it. Bulletin 8-73.

**INDUSTRIAL WIRE CLOTH.**—Buffalo Wire Works Co., Inc. Booklet lists gross prices and weights of all types of industrial wire cloth. Includes a "net on" calculator for finding costs with given supplementary discounts. Bulletin 8-74.

**BUFFING LACQUER.**—Roxalin Flexible Lacquer Co., Inc. Folder gives a brief description of a cellulose type, air drying, flexible lacquer. Fine buffability plus depth is claimed. Bulletin No. 5985, also available, describes a flexible silver lacquer for blanking, printing or lithographing without chipping, flaking or peeling. Bulletin 8-75.

**TEMPERATURE RECORDERS.**—Leeds & Northrup Co. A series of bulletins are available describing and illustrating the use of Rayotube-Micromax recording system. Rayotube pyrometer is designed for mounting outside the furnace, etc., and sights through a hole in wall at the "target." It is claimed this method of mounting greatly increases life of instrument. Bulletin 8-76.

**TESTING MACHINE.**—Taber Instrument Co. Folder describes Abraser, a precision testing machine for measuring wear resistance, toughness, adhesion and rub-off qualities of industrial finishes. Bulletin 8-77.

**CAST IRON GRAPHITIZER.**—Electro Metallurgical Co. Bulletin describes a specially prepared ferrosilicon compound developed for use in cast iron foundries to improve machinability of castings. Product is said to reduce chill in thin sections, and promote more uniform structure. Bulletin 8-78.

**HEAT TREATING CAST IRON.**—International Nickel Co., Inc., 15-page treatise on the heat treatment fundamentals of nickel cast iron, plain cast iron and nickel-chromium-moly iron. Textual matter is supplemented with charts and graphs. Bulletin 8-79.

**MATERIALS HANDLING.**—Louden Machinery Co. Sixty-two-page textbook on materials handling with particular emphasis placed on monorail systems. Illustrated with photographs of typical installations. Bulletin 8-80.

**ACCIDENT PREVENTION EQUIPMENT.**—Safety Equipment Service Co. Catalog lists complete line of safety equipment and supplies. Construction details are illustrated by drawings and photographs. Bulletin 8-81.

**RUBBER PAINT.**—Collord, Inc. Four-page bulletin describing "Surfaseal," a brushing rubber for metals, wood, concrete, masonry, etc. Data concerning coverage, drying time, formulation and methods of application are given. A list of chemical materials is included against which this rubber paint will stand up. Bulletin 8-82.

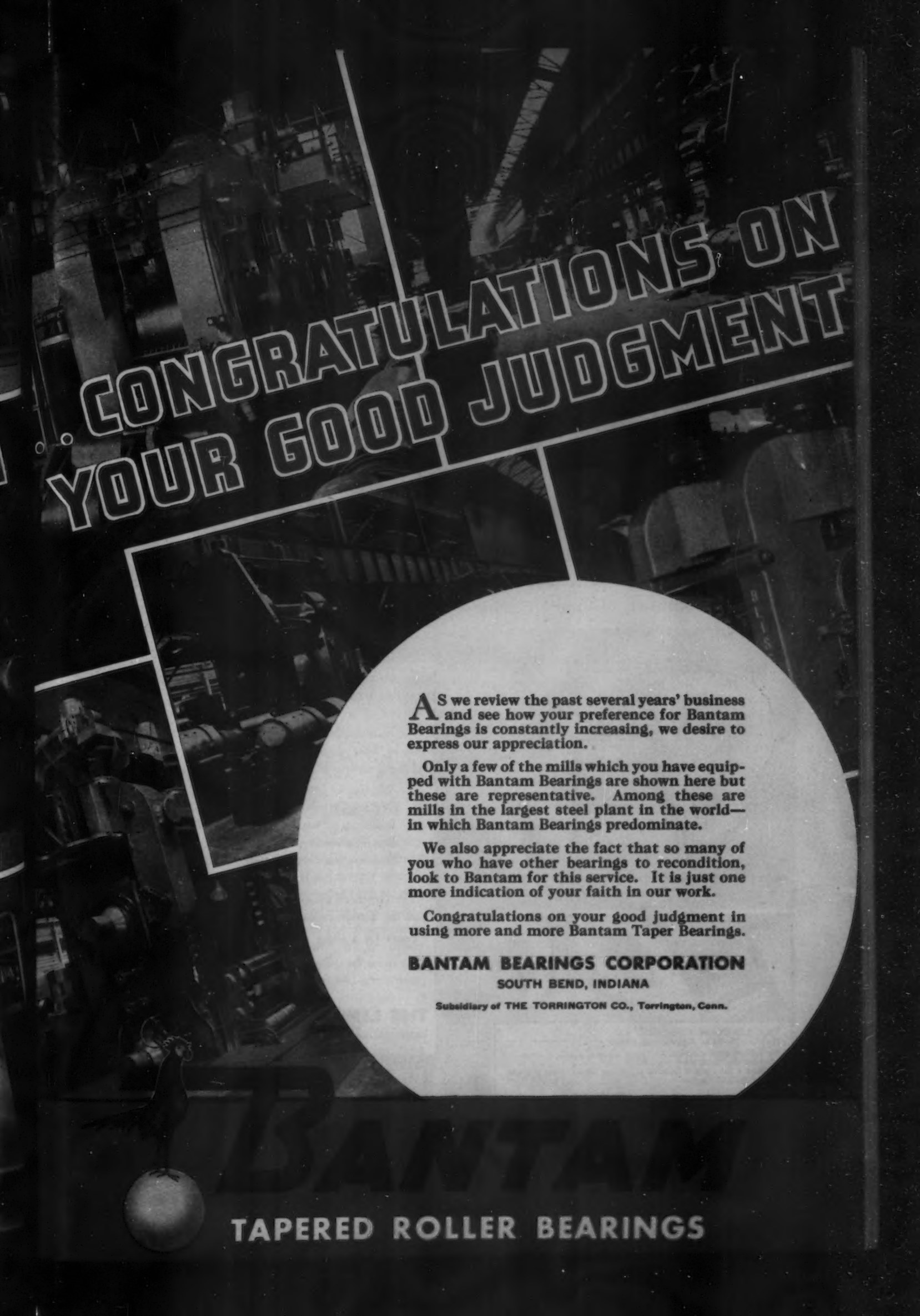
**MECHANICAL CONVEYING.**—Atlas-Chicago Co. Sixty-four-page catalog explaining the Duo-Rail system of conveying. Profusely illustrated with scenes of installations. Includes diagrammatic drawings of rail details, tables of specifications and list prices. Bulletin 8-83.

# Thank You

## STEEL MEN







# CONGRATULATIONS ON YOUR GOOD JUDGMENT

**A**S we review the past several years' business and see how your preference for Bantam Bearings is constantly increasing, we desire to express our appreciation.

Only a few of the mills which you have equipped with Bantam Bearings are shown here but these are representative. Among these are mills in the largest steel plant in the world—in which Bantam Bearings predominate.

We also appreciate the fact that so many of you who have other bearings to recondition, look to Bantam for this service. It is just one more indication of your faith in our work.

Congratulations on your good judgment in using more and more Bantam Taper Bearings.

**BANTAM BEARINGS CORPORATION**

SOUTH BEND, INDIANA

Subsidiary of THE TORRINGTON CO., Torrington, Conn.

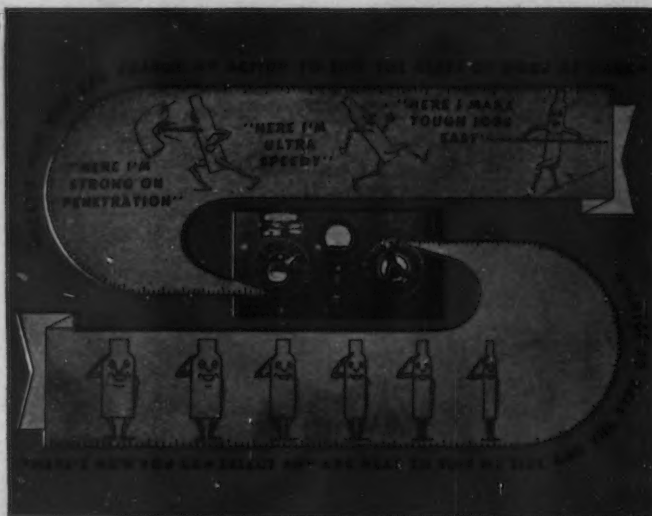


## BANTAM

### TAPERED ROLLER BEARINGS



**"Tough Welding Jobs are Easier and All Welding is 15% to 20% Faster with the New 'Shield-Arc SAE'—**



"For the sake of lower welding costs, use us electrodes with this new Lincoln welder. With its *Dual Continuous Control*, you can tune in the right TYPE of arc as well as the right amount of arc heat for every job. It's as simple as a radio.

"For instance, for the really *tough* jobs, you can get an arc with lots of 'knee action.' It gives us the urge to do some fancy stepping on jobs like these:

- |                              |                      |
|------------------------------|----------------------|
| Welding in strong wind.      | High tensile steels. |
| Welding in crowded quarters. | Manganese steel.     |
| Industrial piping.           | Tool steel.          |
| Pipe line welding.           | Sheet metal.         |
| Stainless and chrome steels. | Aluminum.            |

Bronze, brass, copper.

"Then try us on the general run of welding jobs and we'll show you the fastest stepping and the best welding you ever saw.

"Yours for a wider use of welding and lower welding costs,

**"FLEETWELD ROD"**

—Spokesman for all progress-minded welding electrodes and emissary of

**THE LINCOLN ELECTRIC COMPANY**

*Largest Manufacturers of Arc Welding Equipment in the World*



**THE LINCOLN ELECTRIC CO.,**  
Dept. X-413, Cleveland, Ohio

My welding application is \_\_\_\_\_  
How can the "SAE" do it faster?  
☐ Send a free copy of Bulletin 412 giving details about the new "Shield-Arc SAE" welder.

Name \_\_\_\_\_ Position \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

**"SHIELD-ARC SAE"**  
**THE WELDER WITH DUAL CONTINUOUS CONTROL**



# ZINC ALLOY DIE CASTINGS

—their place in the Major Industries



Automotive • Machinery • Household Appliance • Electrical  
Radio • Hardware • Business Machine • Small Tool • Toy

## FIRM ANCHORAGE —is essential in a portable machine

THIS bench grinder can easily be transported for practical shop use, yet it has sufficient weight to provide a secure "footing" without being bolted to the bench. This factor, together with the necessity for high tensile strength, caused the manufacturer to turn to ZINC Alloy Die Castings for practically all of the metal parts—10 in all. With no other metal and by no other process could this unit have been produced with the same assurance of steady, vibrationless operation, strength and fine appearance, at comparable cost.

Utilizing the possibilities inherent in ZINC Alloy Die Castings, the engineers have designed the unit with a minimum number of parts—smoothly surfaced parts that are easily coated with a handsome metallic finish. With the wheel guards, tool rests, and the inner

and outer wheel clamp brackets being duplicated on each unit there are only 4 die cavities required to produce these 8 castings—the base and carrying handle make 10. This is typical of the interchangeability advantage of ZINC Alloy Die Castings.

Although the production of *your* products may not present problems such as those encountered in small machine manufacturing, you should be thoroughly acquainted with ZINC Alloy Die Castings and the job they are doing in all of the major industries. For further information we suggest you consult a commercial die caster—or write to this Company.

THE NEW JERSEY ZINC CO.  
160 Front Street New York

The Research was done, the Alloys were developed, and most Die Castings are specified with  
**HORSE HEAD SPECIAL** (<sup>99.99+%</sup> UNIFORM QUALITY) **ZINC**





# Tested and Approved

New methods, materials and processes that have been tested and approved will be presented and discussed at the National Metal Congress. Equipment and materials which have been tested and approved will be displayed at the Exposition. Small wonder that this is an important annual event where executives from metal working plants throughout the country gather to see and hear about the things that they must keep posted on in order to meet competition successfully.

Also an institution in the metal working industry is The Iron Age National Metal Insert published in connection with the Show. It will be arranged in six sections as follows:

- ★ *Metal Treating, Furnaces and Refractories*
- ★ *Welding and Cutting*
- ★ *Metals*
- ★ *Metal Cleaning and Finishing*
- ★ *Metal Working Machinery and Tools*
- ★ *Testing and Inspection*

Each section will be introduced with a striking pictorial spread followed by timely original editorial articles on these subjects.

Advertising will be placed right in the sections either following the editorial articles at regular space rates, or facing one of the editorial pages at slight additional cost.

The entire insert with its six sections will be a part of the October 14 issue which will reach subscribers just before the Show and will have additional distribution to visitors at the Show.

It is the tested and approved method of reaching executives in the metal working industry with a selling message at a time when they are thinking about buying.

Make your space reservation now, indicating the section in which you want your advertisement placed. Or write for further details.

**The National Metal  
Congress and Exposition  
Atlantic City  
Auditorium  
October 18-22, 1937**

*Under the auspices of:*  
**American Society for Metals**

*Also co-operating:*  
**American Welding Society  
Iron & Steel Division, A.I.M.E.  
Institute of Metals Division, A.I.M.E.  
Iron & Steel Division, A.S.M.E.  
Machine Shop Practice Division, A.S.M.E.  
Wire Association**

**THE IRON AGE**  
*National Metal*  
*Insert • October 14, 1937*



*"I want SEAMLESS"*

.... SAYS THE MASTER MECHANIC

In a position to consider every factor—original cost, installation, safety and dependability, length of probable life—the master mechanic will pick SEAMLESS. There's no sentiment about it—just plain common sense backed up by the hard facts of long experience. Aside from the fact that seamless is free from points or zones of potential weakness, the way PITTSBURGH Seamless is made it is bound to be a better tube. It is made

of better steel to begin with and the very process itself tends to improve that steel. A completed PITTSBURGH Seamless pipe or tube is a homogeneous piece of steel of uniform strength throughout, treated for greater ease in fitting. Constant inspection-control throughout the process of manufacture, together with thorough final testing, assures the delivery of flawless pipes and tubes from PITTSBURGH STEEL COMPANY mills.

PITTSBURGH STEEL COMPANY • PITTSBURGH, PA.

New York Philadelphia Cleveland Detroit Chicago Memphis Charlotte Tulsa Houston Los Angeles

*Large stocks carried by distributors in principal cities*

**Pittsburgh Seamless**

CONDENSER TUBES • HEAT EXCHANGER TUBES  
BOILER TUBES • HIGH PRESSURE PIPING

T H E R E I S N O T H I N G S U P E R I O R T O S E A M L E S S



# FILLISTER HEADS STOCKED

• For die assemblies and many other purposes, Fillister Head cap screws are required in a full list of sizes—and we stock them regularly. Concentricity at three points—head, body and thread—is essential, which we assure by our final machining. A Class 3 fit is standard. Slots are deep, clean cut, free from burrs. Made by the Kaufman Process, *patented*, Cleveland Fillister Head cap screws have the highest tensile strength commercially practical. THE CLEVELAND CAP SCREW COMPANY, 2930 E. 79th St., Cleveland, Ohio.

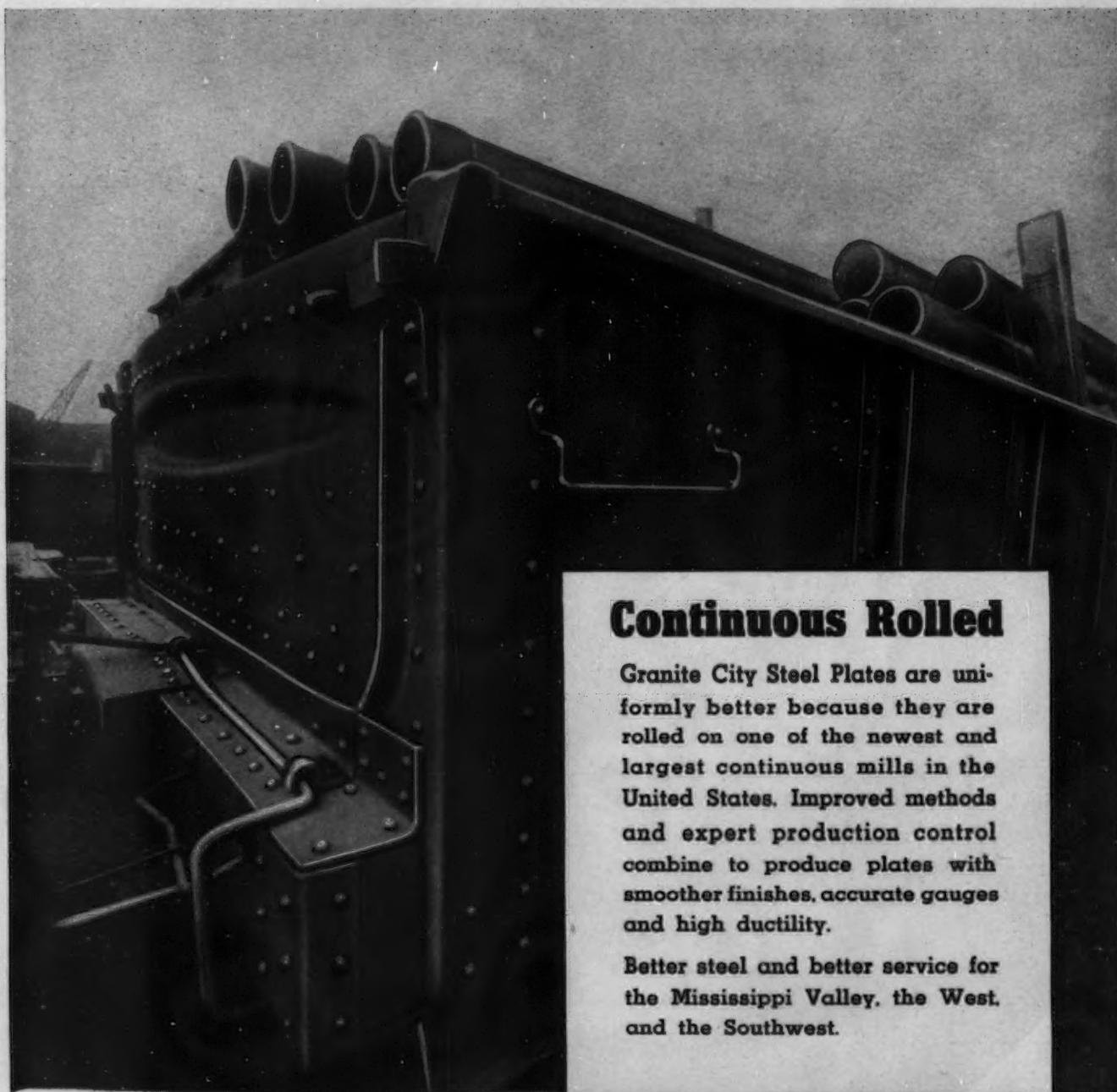


## CLEVELAND CAP SCREWS

SET SCREWS • BOLTS AND NUTS

Address the Factory or our Nearest Warehouse: Chicago, 726 W. Washington Blvd. • Philadelphia, 12th & Olive Streets  
New York, 47 Murray Street • Los Angeles, 1015 E. 16th Street

# GRANITE CITY STEEL PLATES



## Continuous Rolled

Granite City Steel Plates are uniformly better because they are rolled on one of the newest and largest continuous mills in the United States. Improved methods and expert production control combine to produce plates with smoother finishes, accurate gauges and high ductility.

Better steel and better service for the Mississippi Valley, the West, and the Southwest.

GALVANIZED SHEETS • STEEL SHEETS • PLATES AND TIN PLATE



## GRANITE CITY STEEL CO.

GRANITE CITY, ILLINOIS

200 Fifth Avenue, New York

1209 R. A. Long Building, Kansas City

1805 Boatmen's Bank Bldg., St. Louis

1613 Pioneer Building, St. Paul

1602 Mariner Tower, Milwaukee

8 South Michigan Blvd., Chicago

NOW OPERATING ONE OF THE LARGEST CONTINUOUS MILLS IN THE UNITED STATES

130—THE IRON AGE, August 19, 1937





## They're Both Internal Grinding...

*And There's a Norton Wheel for Each!*



**Y**OUR internal grinding job may not be as big as the railroad shop operation above nor as small as the tool room job below—but, large or small, you can be sure that there's a Norton Wheel to do it right.

**Norton Company, Worcester, Mass.**

New York Chicago Detroit Philadelphia Pittsburgh  
Hartford Cleveland Hamilton, Ont. London Paris  
Wessling, Germany Corsico, Italy

W-691

**NORTON ABRASIVES**



**W**HEN you buy Graphited Oil-less Bearings make sure that the bearing is properly designed or you may get less than the performance you expect.

Graphited Oil-less Bearings should be designed and made exactly to meet the requirements of the application under consideration. The style of grooving employed for the graphite composition, the apportionment of bearing contact surfaces (bronze to graphite), are points that have everything to do with the service rendered by the bearing.

Bunting engineering makes it possible to extend the use of this type of bearing to many new applications. Flanged Bushings and Thrust Washers of any size or design also can be obtained in Bunting Graphited Bronze.

We will gladly aid you, without cost or obligation, in making up specifications for Graphited Oil-less Bearings and quote you on such requirements. The Bunting Brass & Bronze Company, Toledo, Ohio . . . Branches and Warehouses in all Principal Cities.



**BUNTING**  *Quality*  
**BRONZE BUSHINGS • BEARINGS**  
**MACHINED AND CENTERED BRONZE BARS**  
**BABBITT METALS**



# MESTA ROLLS



WORKING ROLLS  
and  
BACKING-UP ROLLS  
for  
FOUR HIGH CONTINUOUS  
COLD STRIP MILLS

MESTA MACHINE COMPANY - PITTSBURGH

BUILT BY

MORGAN

Engineering » »



*Able Servants* ON THE OPEN HEARTH FLOOR

● Veteran mill employees have seen men and methods change during the tenure of their service, but few of them can recall when Morgan machines were not a part of steel-making. Here is a 75-ton, 79'6" span, 4-girder type Ladle Crane, and a 5-ton, 24'6" Floor Charger, both built by Morgan Engineering, steadily operating

year after year at highest efficiency and at low maintenance cost. Morgan Engineering Company builds such machinery to last a long time—and its cost is rapidly amortized. Morgan engineers rely upon a highly skilled shop organization, modern equipment and progressive ideas in building Morgan steel mill machinery.



DESIGNERS • MANUFACTURERS • CONTRACTORS

Blooming Mills • Plate Mills • Structural Mills  
Electric Traveling Cranes • Charging Machines  
Ingot Stripping Machines • Soaking Pit Cranes  
Electric Welded Fabrication • Ladle Cranes  
Steam Hammers • Steam Hydraulic Forging  
Presses • Special Machinery for Steel Mills

**THE MORGAN ENGINEERING CO.**

Alliance, Ohio

Pittsburgh, 1420 Oliver Bldg. • New York, 11 W. 42nd St.



**THESE FILES  
NEVER "REFUSE THE WORK"**



*That's why  
mechanics like them*

From an expert mechanic comes an excellent phrase describing the cutting ability of Nicholson, Black Diamond and McCaffrey Files.

"Your files", he says, "never 'refuse the work', even on the hardest metals. Again and again they save time and money on the difficult filing jobs."

Nicholson, Black Diamond and McCaffrey Files accept the hardest jobs and do them well. Their new

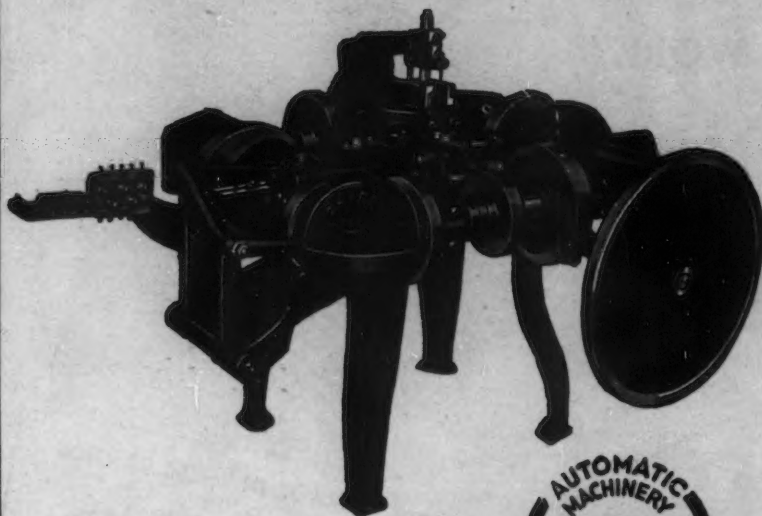
tooth construction bites into the hardest metals; removes stock economically. It is good business judgment to buy Nicholson, Black Diamond and McCaffrey Files because they do more work, cost less to use. Always uniformly high in quality, tested by experts. The greatest file value available to industry.

At mill supply dealers' and hardware wholesalers'.  
Nicholson File Company, Providence, R. I., U. S. A.

**A FILE FOR EVERY PURPOSE**

Baird Automatic  
Wire and Ribbon

# METAL FORMERS



Without sacrificing efficiency, Baird has been able to design a machine which can accommodate almost every type of wire and ribbon metal forming job in demand today.

This machine, the Baird Four Slider, is built in quantity, and many sizes are regularly carried in stock. Outstanding among its features are rigid construction, speedy and smooth operation, accessibility of tools, general openness of design throughout.

For work not exactly suited to this standard machine, special equipment is being designed constantly, and we are therefore in position to fill every possible requirement along this particular line.

**THE BAIRD MACHINE COMPANY**  
BRIDGEPORT, CONN.

—1851-1937—

HYDRAULIC MACHINERY  
**ELMES**  
SINCE 1851  
CHICAGO

—86 Years—

## HYDRAULIC PRESSES FOR ALL PURPOSES

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TESTING AND ERECTING FLOOR SHOP No. 3

Left to Right:—Vertical Type Extrusion Press. 600 Ton Forging Press. 100 Ton Deep Drawing Press.  
Battery of 4—100 Ton Rapid Acting Stamping and Forming Presses.

**CHARLES F. ELMES ENGINEERING WORKS, 1003 FULTON ST., CHICAGO, ILLINOIS, U. S. A.**



# THE *Complete* SPRAY- PAINTING AND FINISHING SYSTEM



SPRAY GUNS  
MATERIAL CONTAINERS  
REGULATORS  
SPRAY BOOTHS  
EXHAUST FANS  
HOSE AND CONNECTIONS  
AIR COMPRESSORS  
ACCESSORIES

## DeVilbiss



Modern methods of production finishing require the exhaust of vapors and the ventilation of the finishing area. Included in the comprehensive DeVilbiss System, is a complete line of exhaust equipment for use with any finishing material, in any finishing operation.

From a small stamping to a locomotive, DeVilbiss Exhaust Equipment accommodates objects small and large in any form or shape.

The many different types of DeVilbiss Exhaust Equipment include: the simple direct type of exhaust, the indirect type, the downdraft type, the dry reclaiming type, the water wash type, the canopy type.

The complete DeVilbiss System also includes every other item of equipment required in the spray process of paint application—air compressors, material containers, regulators, hose, hose connections, spray guns and all accessories. For all production finishing and maintenance painting, the broad DeVilbiss line holds the answer to greater efficiency and lower costs.

If your problem is so highly specialized that it cannot be met by standard DeVilbiss Equipment, our engineers will plan an installation to meet your individual requirements.

**THE DEVILBISS COMPANY • TOLEDO • OHIO**

**SHAFER**

## CONCAVE ROLLER DESIGN



Shafer CONCAVE roller design combines in a simple, efficient bearing the essential features of 1. Rolling self-alignment within the bearing itself, 2. Capacity for radial, thrust, or any combination of radial-thrust loads, 3. Simple adjustability.

This exclusive combination means greater adaptability to the majority of industrial uses and a reserve of performance to meet even the severest operating conditions.

Available in a full range of sizes:  
Pillow Blocks • Flange Units • Take-up  
Units • Hanger Boxes • Cartridge Units  
Duplex Units • Conveyor Rolls • Radial-  
Thrust Roller Bearings

**SHAHER BEARING CORPORATION**  
35 East Wacker Drive Chicago

*Everything You Need in a Roller Bearing*

★

From The Factory  
Manager of a Com-  
pany Rated "Over  
a Million".

★

*"The writer wishes to repeat a statement which he has made on various occasions to different members of our organization, that The Iron Age is an outstanding publication for our particular use.*

*"Just yesterday, I read and passed on to our Research Department an issue of The Iron Age calling their attention to the timely (for us) article on 'Wear and Corrosion Resistance'.*

*"Permit me to mention at this time our appreciation of your editorials by J. H. Van Deventer".*

★

★



# CROSBY for STAMPINGS

*Serving Industry Since 1896*



**A**LL our efforts have been concentrated on one product — STAMPINGS—for 40 years. We have made stampings, deep, intricate, heavy, light, large and small, for nearly every branch of industry.



*Get Acquainted With Crosby Service*

## THE CROSBY COMPANY

General Offices and Works: BUFFALO, NEW YORK

Branch Offices: Chicago Detroit Cleveland New York Philadelphia

H

## OLCROFT & COMPANY

LEADERS IN BUILDING AND DESIGNING ELECTRIC AND COMBUSTION FURNACES, KILNS AND OVENS.  
HOME OFFICE: DETROIT—BRANCHES: CHICAGO, PHILADELPHIA  
CANADA: WALKER METAL PRODUCTS, LTD., WALKERVILLE, ONT.

**W. P. SNYDER & COMPANY**

**SHENANGO-FURNACE CO.**

Iron Ore Pig Iron  
Coal and Coke



OLIVER BUILDING  
PITTSBURGH, PA.



### THE ATHENIA STEEL CO.

Clifton Ave., Clifton, N. J.

Works, Athenia, N. J.

Makers of High Grade Tempered and Polished Steel for Clock, Watch, Motor and Typewriter Springs. Also Wound Springs. Tempered and Untempered Steel for other purposes. Special quality equal to finest imported for finish and accurate rolling. Also Stainless Steels of various grades.

**AGENTS:—**

Lapham Hickey Co.—3333 W. 47th Place, Chicago, Ill.—414 United Artists Bldg., Detroit, Mich.  
E. F. Krause & Co.—430-440 Commercial St., Los Angeles, Calif.  
Hill Chase & Co.—Richmond and Ontario Sts., Philadelphia, Pa.  
Wetherell Bros. Co.—51 Albany St., Cambridge, Mass.

**In The  
IRON AGE  
you contact over 70,000  
readers**



There is a  
**Toledo Alloy Steel**  
for every need

**THE INDUSTRIAL STEEL CASTING CO.**  
Toledo, Ohio



# JUST BETWEEN US TWO

## "Gyps," He Calls Us

**U**NBLEMISHED reputations are a comfort and also, at times, a bore. So we announce with pride that after keeping our escutcheon immaculate for eighty-eight years we have prospects for acquiring a flyspeck.

It seems that some months ago a man in a small Indiana town subscribed and asked for clippings of certain articles which we had praised generously. We sent them. Before the moon had gone from half to full, we received a letter from him, telling us that the articles were not what he wanted, that we were a bunch of gyps, and that he had turned the whole thing over to the local Better Business Bureau.

In a note dripping with injured dignity, we refunded his money, and dug in our heels to defend our honor in a bout with the B.B.B. But so far nothing has happened, and we are beginning to fear that no blot will soften the blinding glare of our shield.

## Auditor Finds Error in Our Records

**W**E had another bad scare last week when the Audit Bureau of Circulations' auditor went over our records. He said he had found an error in calculating our subscription renewal percentage. Our Adam's apple went into high frequency as we quavered, "What's wrong?"

"You report," he said with that hauteur peculiar to auditors, lawyers and smash hit box office attendants, "a renewal percentage of 80.09. The correct figure is 80.91 per cent."

## We Get Tired of 'Em

**A**FTER gazing fixedly in its crystal, the American Iron and Steel Institute divines that the finished steel made last year will have an average life of 33½ years. This column would be at least third from the last to doubt the accuracy of the Institute's calculations. But we hope that its slide rule slipped, for it saddens us to hear that the things made of last year's steel will still be going strong in 1970.

People don't want things to last a lifetime. There is a therapeutic thrill in buying something new and glittering—not to mention the economic uplift. Things that outlast their welcome are a nuisance, and if the typewriter on which this is banged out is, God forbid, in working condition by 1955, we will speed it on its way to the scrap pile by nudging it off its stand.

## Help Help!

**A**CLEANING and fettling department is, according to page 119 of the Aug. 5 Iron Age, one of the four main divisions of a gray iron foundry. Always eager to plug a hole in our vocabulary we crave to know what fettling is. Is it sand-blasting or tumbling? Or does it mean simply conditioning, as in the expression, "fine fettle?"

Our fettling expert is on his vacation, so we shall have to bear with our satisfied curiosity until he returns, unless you know.

## Whoops, My Dear!

**A**N advertising agency executive impressionizes:

"A yard of cold steel . . . well handled and sharp pointed . . . stabbing at the fundamentals . . . tempered like a true Toledo blade . . . well, that's one picture of Iron Age."

We're red all over.

## Rebuke

**T**HAT quick gender-changer, *Tide* (adv. journal), lays this grammatical egg in its Aug. 1 issue:

"Fortune, who deals with Crowell in its current issue, . . ."

Change "its" to "their" and it's suitable for framing.

## He Wants to Make Them Unanimous

**A**N Indiana manufacturer carols:

"One of the things I enjoy most in *The Iron Age* are the editorials by Mr. Van Deventer. I wish it were possible for every man, woman and child in the nation to read them."

## Marine Petrifier Gets O.K.

**T**HOSE terriers of the deep, *USS Flusser* and *USS Dobbin*, are, as we remarked here, afflicted with names approaching zero in combativeness. Always as willing to praise as to condemn, we commend new subscriber, *USS Medusa*, San Pedro, Calif., upon possessing a name with a psychological wallop, unless, of course, she should have the misfortune to meet up with the *Perseus*.

—A.H.D.

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## ABRASIVE WHEELS—See Grinding Wheels

## ABRASIVE CLOTH & PAPER

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## ACCUMULATORS—Hydraulic

Baldwin-Southwark Corp., Southwark Div., Philadelphia.

Hydraulik GmbH, Duisburg, Germany.

Lake Erie Engineering Corp., 68 Kenmore St., Buffalo, N. Y.

Wood, B. D. & Co., Philadelphia.

## ACETYLENE—Dissolved in Cylinders & Small Tanks

Air Reduction Sales Co., 60 East 42nd St., N. Y. C.

Linde Air Prods. Co., The, 30 East 42nd St., N. Y. C.

## ACID-PROOF CEMENT

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## ACID-PROOF CONSTRUCTION

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## ACIDS—Pickling

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Du Pont de Nemours, E. I., & Co., Inc., Gracell Chemicals Dept., Wilmington, Del.

Pennsylvania Salt Mfg. Co., Philadelphia, Pa.

## AIR CONDITIONING EQUIPMENT

American Blower Corp., 6000 Russell St., Detroit.

## AIR TANKS AND CYLINDERS

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Seafie, William B., & Sons Co., Pgh.

## ALLOYS—Copper

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Electro Metallurgical Sales Corp., 30 East 42nd St., N. Y. C.

## ALLOYS—Magnesium

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Titanium Alloy Mfg. Co., The, Niagara Falls, N. Y.

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## ALLOYS—Vanadium

Vanadium Corp. of America, 420 Lexington Ave., N. Y. C.

## ALLOYS—Zinc Base Die Casting

New Jersey Zinc Co., The, 160 Front St., N. Y. C.

## ALUMINUM

Aluminum Co. of America, Pittsburgh.

Seligman, Arthur, & Co., Inc., 30 Rockefeller Plaza, R. C. A. Bldg., N. Y. C.

## ANMETERS AND VOLTMETERS—Resistors

Leeds & Northrup Co., Philadelphia.

## AMMONIA RECOVERY PLANTS

Koppers Co., Pittsburgh.

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Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Columbia Steel Co. (U. S. Steel Corp. Subsidiary), San Francisco, Calif.

Inland Steel Co., Chicago.

Jones & Laughlin Steel Corp., Pittsburgh.

Ryerson, Jos. T., & Son, Inc., Chicago.

Scully Steel Products Co. (U. S. Steel Corp. Subsidiary), Chicago.

Steel & Tubes, Inc., Cleveland.

Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

Weirton (W. Va.) Steel Co.

## ANGLES, BEAMS, CHANNELS & TEES—Magnesium Alloys

Dow Chemical Co., The, 921 Jefferson Ave., Midland, Mich.

## ANNEALING—See Heat Treating

## ANNEALING BOXES

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Petroleum Iron Works Co., The, Sharon, Pa.

United Engineering & Fdry. Co., Pgh.

## ANNEALING COVERS

Petroleum Iron Works Co., The, Sharon, Pa.

Surface Combustion Corp., 2375 Dorr St., Toledo.

## ANODES—All Types

Du Pont de Nemours, E. I., & Co., Inc., Gracell Chemicals Dept., Wilmington, Del.

Seymour (Conn.) Mfg. Co.

Udylite Co., The, Detroit.

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Du Pont de Nemours, E. I., & Co., Inc., Gracell Chemicals Dept., Wilmington, Del.

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Morse Twist Drill & Mch. Co., New Bedford, Mass.

## ARMORING MACHINERY—Cable, Wire, Rope

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## ARRESTERS—Spark

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## ASBESTOS

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## AXLES—Car or Locomotive

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## BALANCING EQUIPMENT

Ciboh Machine Co., Madison, Wis.

## BALING PRESSES—Scrap—See Presses

## Balls

Abbott Ball Co., The, 1047 New Britain Ave., Hartford, Conn.

Hartford (Conn.) Steel Ball Co., The.

Balls—Steel, Brass or Bronze

Abbott Ball Co., The, 1047 New Britain Ave., Hartford, Conn.

Hartford (Conn.) Steel Ball Co., The.

New Departure Div., General Motors Corp., Bristol, Conn.

SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.

## BANDS—Steel

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Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

## BANDS—Welded

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## BARRELS—Burnishing

Abbott Ball Co., The, 1047 New Britain Ave., Hartford, Conn.

Ransohoff, N., Inc., Cincinnati.

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Hairst Mch. Co., The, Bridgeport, Conn.

Hartford (Conn.) Steel Ball Co., The.

Ransohoff, N., Inc., Cincinnati.

Whiting Corp., Harvey, Ill.

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Republic Steel Corp., Cleveland, Ohio.

## BARS—Aluminum

Aluminum Co. of America, Pittsburgh.

## BARS—Brass, Bronze or Copper

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Johnson Bronze Co., 505 So. Mill St., New Castle, Pa.

## BARS—Cold Drawn

American Steel & Wire Co. (U. S. Steel Corp. Subsidiary), Chicago.

Diles & Laughlin, Inc., Harvey, Ill.

Union Drawn Steel Co., Massillon, Ohio.

## BARS—Concrete Reinforcing

Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Columbia Steel Co. (U. S. Steel Corp. Subsidiary), San Francisco, Calif.

Jones & Laughlin Steel Corp., Pittsburgh.

Laclede Steel Co., St. Louis, Mo.

Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

## BARS—Magnesium Alloys

Dow Chemical Co., The, 921 Jefferson Ave., Midland, Mich.

## BARS—Rustless

Rustless Iron & Steel Corp., Baltimore, Md.

## BARS—Steel

Ames, W., & Co., Jersey City, N. J.

Andrews Steel Co., The, Newport, Ky.

Behlheim (Pa.) Steel Company.

Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

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Jones & Laughlin Steel Corp., Pittsburgh.

Republic Steel Corp., Cleveland, Ohio.

Ryerson, Jos. T., & Son, Inc., Chicago.

Scully Steel Products Co. (U. S. Steel Corp. Subsidiary), Chicago.

Steel & Tubes, Inc., Cleveland.

Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

Timken Roller Bearing Co., The, Canton, O.

Timken Steel & Tube Div., The Timken Roller Bearing Co., Canton, O.

Weirton (W. Va.) Steel Co.

Youngstown (Ohio) Sheet & Tube Co., The.

## BATTERIES—Storage

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## BATTERY CHARGERS

Cutler-Hammer, Inc., Milwaukee.

## BEAMS—See Angles, Beams, Channels and Tees

## BEARINGS—Babbitt

Johnson Bronze Co., 505 So. Mill St., New Castle, Pa.

## BEARINGS—Ball

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Federal Bearings Co., Inc., The, Foughkeepsie, N. Y.

New Departure Div., General Motors Corp., Bristol, Conn.

Norma-Hoffmann Bearings Corp., Stamford, Conn.

SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.

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**BENDING MACHINES—Hand and Power**  
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**BILLETS—Forging**  
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**BILLETS—Steel**  
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**BLANKS—Gear, Silent Steel**  
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**BLAST FURNACES**  
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**BLAST GATES**  
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**BLOWPIPES—Oxy-Acetylene Welding & Cutting**  
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**BOILERS—Water Tube**  
 Babcock & Wilcox Co., The, 85 Liberty St., New York City.

**BOLT CUTTERS**  
 Landis Mch. Co., Inc., Waynesboro, Pa.

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**California:** C. F. Bolotti Machinery Co., 111-111 Fulton St., San Francisco, Calif.  
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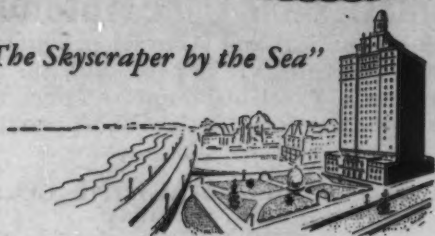
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Republic Steel Corp., Cleveland, Ohio.  
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- BRIDGE BUILDERS**  
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- BRIQUETS—Ferrous**  
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- BROACHING MACHINES**  
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Cincinnati (Ohio) Milling Mch. Co., The.  
Oliver Co., The, 1311 W. Bruce St., Milwaukee.
- BRONZE FOR DIES**  
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- BRONZE—Phosphor**  
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Phosphor Bronze Smelting Co., The, Phila.  
Revere Copper & Brass, Inc., 230 Park Ave., N. Y. C.  
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Seymour (Conn.) Mfg. Co.
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- BRUSHES—Wire**  
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- BUCKETS—Electric Motor**  
Hayward Co., The, 50 Church St., N. Y. C.
- BUCKETS—Elevator**  
Jeffrey Mfg. Co., The, Columbus, Ohio.
- BUCKETS—Orange Peel**  
Hayward Co., The, 50 Church St., N. Y. C.
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Vomegat Moulder Corp., 1807 Madison Ave., Indianapolis, Ind.
- BUFFING APPLICATORS—Automatic**  
Packer Machine Co., The, Meriden, Conn.
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- BUILDINGS—Steel**  
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Belmont Iron Works, Philadelphia.  
Bethlehem (Pa.) Steel Co.  
Blaw-Knox Co., Pittsburgh.  
Ferguson, H. K., Co., The, Cleveland.  
Iron & Steel Products, Inc., Chicago.
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Beatty Mch. & Mfg. Co., 936-150th St., Hammond, Ind.  
Steelweld Machinery Co., Cleveland.
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Bunting Brass & Bronze Co., Toledo, O.  
Johnson Bronze Co., 605 So. Mill St., New Castle, Pa.  
Lawrenceville Bronze Co., Pittsburgh.  
Phosphor Bronze Smelting Co., The, Phila.  
Shenango-Penn Mold Co., Pittsburgh.
- BUSHINGS—Oilless**  
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- BUSHINGS—Phosphor Bronze**  
Bunting Brass & Bronze Co., Toledo, Ohio.  
Phosphor Bronze Smelting Co., The, Phila.
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- CADMIUM PLATING PROCESS**  
Du Pont de Nemours, E. I., & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.  
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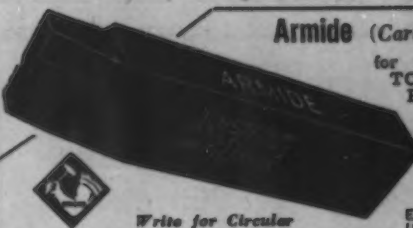
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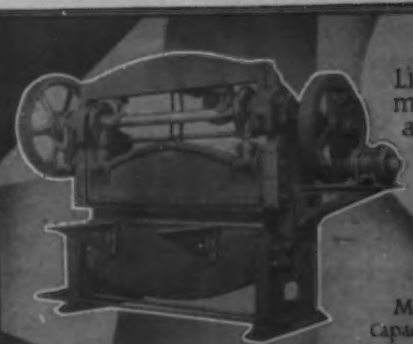
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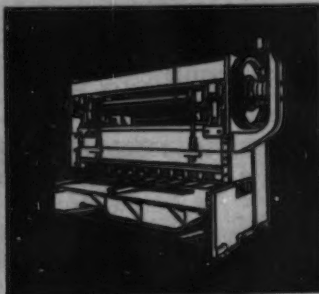
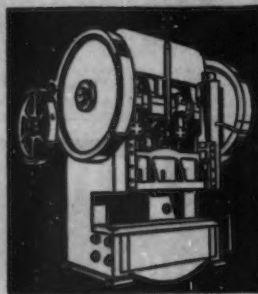


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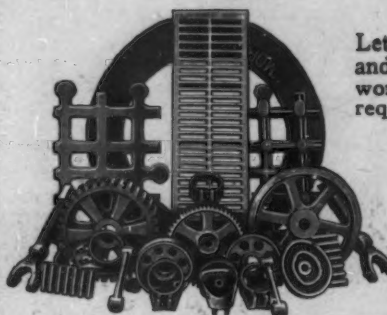
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Morgan Construction Co., Worcester, Mass.  
Wood, R. D., & Co., Philadelphia.

## GAS RECOVERY COKE OVENS

Koppers Co., Pittsburgh.

## GASKETS—Asbestos, Metal or Rubber

Garlock Packing Co., The, Palmyra, N. Y.  
Johns-Manville Corp., 22 East 40th St., New York City.

## GASKETS—Rubber

Goodrich, B. F., Co., The, Akron, Ohio.

## GEAR CHECKING EQUIPMENT

Michigan Tool Co., Detroit.

## GEAR CUTTING

Earle Gear & Machine Co., Phila.  
Farrel-Birmingham Co., Inc., Buffalo, N.Y.  
Gleason Works, Rochester, N. Y.  
James, D. O., Mfg. Co., Chicago.  
Jones, W. A., Fdry. & Mch. Co., 4401 Roosevelt Rd., Chicago.  
Philadelphia (Pa.) Gear Works.  
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

## GEAR CUTTING MACHINES

Brown & Sharpe Mfg. Co., For., R. I.  
Farrel-Birmingham Co., Inc., Buffalo, N.Y.  
Gleason Works, Rochester, N. Y.

## GEAR DRIVES—Herringbone

Jones, W. A., Fdry. & Mch. Co., 4401 Roosevelt Rd., Chicago.  
Lewis Foundry & Mch. Co., Pittsburgh.  
United Engineering & Fdry. Co., Pgh.

## GEAR LAPPING MACHINES

Michigan Tool Co., Detroit.

## GEARMOTORS

Allis-Chalmers Mfg. Co., Milwaukee.  
James, D. O., Mfg. Co., Chicago.  
Reliance Electric & Engng. Co., Cleveland.  
Westinghouse Elec. & Mfg. Co., East Pgh.

## GEAR PLANNING MACHINES

Gleason Works, Rochester, N. Y.

## GEAR SHAVING MACHINES

Michigan Tool Co., Detroit.

## GEARS—Bevel

Boston Gear Wks., Inc., North Quincy, Mass.  
Gleason Works, Rochester, N. Y.  
James, D. O., Mfg. Co., Chicago.  
Richardson Co., The, Melrose Park, Ill.

## GEARS—Heat Treated

Gleason Works, Rochester, N. Y.  
James, D. O., Mfg. Co., Chicago.  
Jones, W. A., Fdry. & Mch. Co., 4401 Roosevelt Rd., Chicago.  
Simonds Mfg. Co., Pittsburgh.

## GEARS—Herringbone

Farrel-Birmingham Co., Inc., Buffalo, N.Y.  
Horsburgh & Scott Co., 5112 Hamilton Ave., Cleveland.  
James, D. O., Mfg. Co., Chicago.

## GEARS—Machine Cut

Boston Gear Wks., Inc., North Quincy, Mass.  
Cleveland (Ohio) Worm & Gear Co.  
Gleason Works, Rochester, N. Y.

## GEARS—Non-Metallic

Boston Gear Wks., Inc., North Quincy, Mass.  
Chicago (Ill.) Rawhide Mfg. Co., The, 1306 Elston Ave.  
General Electric Co., Schenectady, N. Y.

## GEARS—Rawhide

Chicago (Ill.) Rawhide Mfg. Co., The, 1306 Elston Ave.  
James, D. O., Mfg. Co., Chicago.

## GEARS—Steel, Silent

Waldron, John, Corp., New Brunswick, N. J.

## GEARS—Spir

Boston Gear Wks., Inc., North Quincy, Mass.  
James, D. O., Mfg. Co., Chicago.  
Jones, W. A., Fdry. & Mch. Co., 4401 Roosevelt Rd., Chicago.

## GEARS—Worm

Boston Gear Wks., Inc., North Quincy, Mass.  
Cleveland (Ohio) Worm & Gear Co.  
Horsburgh & Scott Co., 5112 Hamilton Ave., Cleveland.

## GENERATORS—Acetylene

Air Reduction Sales Co., 60 East 42nd St., N. Y. C.  
Linde Air Prods. Co., The, 30 East 42nd St., N. Y. C.  
Milburn, Alexander Co., The, Baltimore, Md.

## GENERATORS—Electric

Fairbanks, Morse & Co., Chicago.  
Lincoln Electric Co., The, Cleveland.  
Reliance Electric & Engng. Co., Cleveland.  
Westinghouse Elec. & Mfg. Co., East Pgh.

## GENERATORS—Electric, Second Hand

(See Clearing House Section)

## GOGGLES—Safety

American Optical Co., Southbridge, Mass.

## GOVERNORS—Air Compressor

Westinghouse Air Brake Co., Industrial Div., Pittsburgh.

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J-B Engineering Sales Co., 1728 Orange St., New Haven, Conn.

## GRATING—Flooring, Sidewalk, etc.—See

Flooring—Open Steel

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Gulf Oil Corp., Gulf Refining Co., Pittsburgh.  
Shell's Industrial Lubricants Div., Shell Bldg., San Francisco, Shell Bldg., St. Louis, & 50 W. 50th St., N. Y. C.  
Socony-Vacuum Oil Co., Inc., 26 Broadway, N. Y. C.

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Norton Co., Worcester, Mass.  
Vonnegut Moulder Corp., 1807 Madison Ave., Indianapolis, Ind.

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Cincinnati (Ohio) Grinders Incorporated.

GRINDING MACHINES—Chuckling  
Bryant Chucking Grinder Co., Springfield, Vt.

GRINDING MACHINES—Cutter & Reamer  
Cincinnati (Ohio) Milling Mch. Co., The Gallmeyer & Livingston Co., Grand Rapids, Mich.  
Landis Tool Co., Waynesboro, Pa.

GRINDING MACHINES—Cylinder  
Heald Mch. Co., Worcester, Mass.  
Hutto Machine Division, Carborundum Co., Detroit.

GRINDING MACHINES—Cylindrical  
Brown & Sharpe Mfg. Co., Providence, R.I.  
Cincinnati (Ohio) Grinders Incorporated.  
Landis Tool Co., Waynesboro, Pa.  
Norton Co., Worcester, Mass.

GRINDING MACHINES—Die  
Landis Mch. Co., Inc., Waynesboro, Pa.

GRINDING MACHINES—Drill  
Gallmeyer & Livingston Co., Grand Rapids, Mich.

GRINDING MACHINES—Gear & Worm  
Pratt & Whitney Div. Niles-Bement-Pond Co., Hartford, Conn.

GRINDING MACHINES—Internal  
Bryant Chucking Grinder Co., Springfield, Vt.

Greenfield (Mass.) Tap & Die Corp.  
Heald Mch. Co., Worcester, Mass.  
Hutto Machine Division, Carborundum Co., Detroit.

GRINDING MACHINES—Internal Centerless  
Heald Mch. Co., Worcester, Mass.

GRINDING MACHINES—Internal Multiple Spindle  
Baird Mch. Co., The Bridgeport, Conn.

GRINDING MACHINES—Portable Electric  
Wodack Electrical Tool Corp., Chicago.

GRINDING MACHINES—Portable Flexible Shaft  
Pratt & Whitney Div. Niles-Bement-Pond Co., Hartford, Conn.  
Strand, N. A., & Co., Chicago.

GRINDING MACHINES—Portable Pneumatic  
Cleveland (Ohio) Pneumatic Tool Co., The Ingersoll-Rand Co., 11 Broadway, New York City.

Warner & Swasey Co., The Cleveland.

GRINDING MACHINES—Roll  
Cincinnati (Ohio) Grinders Incorporated.  
Farrel-Birmingham Co., Inc., Ansonia, Conn.  
Landis Tool Co., Waynesboro, Pa.

GRINDING MACHINES—Saw  
Heller Machine Co., 114 Liberty St., N. Y. C.

GRINDING MACHINES—Snagging  
Vonnegut Moulder Corp., 1807 Madison Ave., Indianapolis, Ind.  
Warner & Swasey Co., The Cleveland.

GRINDING MACHINES—Surface  
Abrasive Machine Tool Co., E. Prov., R. I.  
Blanchard Machine Co., The Cambridge, Mass.

Gallmeyer & Livingston Co., Grand Rapids, Mich.

Heald Mch. Co., Worcester, Mass.  
Norton Co., Worcester, Mass.  
Pratt & Whitney Div. Niles-Bement-Pond Co., Hartford, Conn.

GRINDING MACHINES—Swing Frame  
Vonnegut Moulder Corp., 1807 Madison Ave., Indianapolis, Ind.

GRINDING MACHINES—Tap  
Gallmeyer & Livingston Co., Grand Rapids, Mich.

GRINDING MACHINES—Tool  
Cincinnati (Ohio) Milling Mch. Co., The Globe Machine Co., Madison, Wis.

Landis Tool Co., Waynesboro, Pa.  
LeBlond, R. K. Mch. Tool Co., Cincinnati.  
Norton Co., Worcester, Mass.

GRINDING MACHINES—Universal  
Cincinnati (Ohio) Grinders Incorporated.  
Landis Tool Co., Waynesboro, Pa.  
Norton Co., Worcester, Mass.

GRINDING MACHINES—Valve  
Landis Tool Co., Waynesboro, Pa.

GRINDING WHEELS  
Bakelite Corp., 247 Park Ave., N. Y. C.  
Blanchard Machine Co., The Cambridge, Mass.  
Carborundum Co., The Niagara Falls, N.Y.

Macklin Co., Jackson, Mich.  
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., The, 2 Townsend St., Passaic, N. J.  
Norton Co., Worcester, Mass.

GRINDING WHEELS—Segment  
Blanchard Machine Co., The Cambridge, Mass.

GRIT—Steel  
Pittsburgh (Pa.) Crushed Steel Co.

HACK SAW BLADES—See Saws—Hack Saws

HACK SAW MACHINES  
Armstrong-Ham Mfg. Co., Chicago.  
Peerless Mch. Co., Racine, Wis.

### HAMMER BOARDS

Irwin, H. G., Lumber Co., 1129 State St., Erie, Pa.

HAMMERS—Air, Forging  
Nasol Engineering & Machine Works, Philadelphia.

HAMMERS—Chipping & Riveting—Pneumatic  
Cleveland (Ohio) Pneumatic Tool Co., The Ingersoll-Rand Co., 11 Broadway, New York City.

HAMMERS—Drop  
Bills, E. W., Co., Toledo, Ohio.

ERIE (Pa.) Foundry Co.  
Morgan Engineering Co., The Alliance, O.  
Standard Machinery Co., Providence, R. I.

HAMMERS—Helve  
Bradley, C. C. & Son, Inc., Syracuse, N. Y.

HAMMERS—Pneumatic  
Cleveland (Ohio) Pneumatic Tool Co., The Ingersoll-Rand Co., 11 Broadway, New York City.

HAMMERS—Portable Electric  
Wodack Electrical Tool Corp., Chicago.

HAMMERS—Power  
Bradley, C. C. & Son, Inc., Syracuse, N. Y.

HAMMERS—Rawhide  
Chicago (Ill.) Rawhide Mfg. Co., 1306 Elson Ave.

HAMMERS—Steam  
ERIE (Pa.) Foundry Co.  
Morgan Engineering Co., The Alliance, O.

HANGERS—Ball Bearing  
S K F Industries, Inc., Front St. & Erie Ave., Phila., Pa.

HANGERS—Roller Bearing  
Hyatt Bearings Div., General Motors Corp., Newark, N. J.

HARDNESS TESTING MACHINES  
Shore Instrument & Mfg. Co., The, Jamaica, L. I., N. Y.

HEADING MACHINES  
Ajax Mfg. Co., The, Euclid, Ohio.  
Manville, E. J., Mch. Co., Waterbury, Ct.  
Waterbury (Conn.) Farrel Foundry & Machine Co., The.

HEADS—Spun and Pressed  
Central Iron & Steel Co., Harrisburg, Pa.  
Worth Steel Co., Claymont, Del.

HEADS—Steel—Flanged & Dished  
Central Iron & Steel Co., Harrisburg, Pa.

HEAT RESISTING PRODUCTS—Electric  
Globe Div., The Carborundum Co., Niagara Falls, N. Y.

Holden, A. F., Co., New Haven, Conn.

HEAT TREATING  
Barnes-Gibson-Raymond, Detroit Plant, Div. of Associated Spring Corp.

Barnes, Wallace Co., The, Div. of Associated Spring Corp., Bristol, Conn.

General Machine Works, York, Pa.  
Gibson, Wm. D., Co., Div. of Associated Spring Corp., Chicago.

Holden, A. F., Co., New Haven, Conn.  
Parish Pressed Steel Co., Reading, Pa.

HEAT TREATING COMPOUNDS  
Holden, A. F., Co., New Haven, Conn.

HEAT TREATING EQUIPMENT—Air

Brew  
Holden, A. F., Co., New Haven, Conn.  
Maehler, Paul Co., The, Chicago.

Surface Combustion Corp., 2375 Dorset St., Toledo.

HEATING RESISTANCE—Non-Metallic  
Globe Div., The Carborundum Co., Niagara Falls, N. Y.

Holden, A. F., Co., New Haven, Conn.

HOISTS—Air  
Curtis Pneumatic Machinery Co., 1948 Klenlen Ave., St. Louis, Mo.

Detroit (Mich.) Hoist & Mch. Co.  
Ingersoll-Rand Co., 11 Broadway, N. Y. C.

Northern Engineering Works, Detroit.  
Ridgway, Craig & Son Co., Coatesville, Pa.

HOISTS—Chain  
Wright Mfg. Div., American Chain & Cable Co., Inc., York, Pa.

Cable Co., Inc., York, Pa.  
Yale & Towne Mfg. Co., The, Phila. Div., Phila., Pa.

HOISTS—Electric  
American Engineering Co., Philadelphia.

Detroit (Mich.) Hoist & Mch. Co.  
Euclid Crane & Hoist Co., The, Euclid, O.

Harnischfeger Corp., 4401 W. National Ave., Milwaukee, Wis.

Northern Engineering Works, Detroit.

Philadelphia (Pa.) Gear Works.  
Robbins & Myers, Inc., Springfield, Ohio.

Shaw-Box Crane & Hoist Div. Manning, Maxwell & Moore, Inc., 402 Broadway, Muskegon, Mich.

Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y.

Wright Mfg. Div., American Chain & Cable Co., Inc., York, Pa.

Yale & Towne Mfg. Co., The, Phila. Div., Phila., Pa.

HOISTS—Electric Traveling  
American Monorail Co., The, Cleveland.

Cleveland Tramrail Div. of The Cleveland Crane & Engng. Co., Wickliffe, Ohio.

Euclid Crane & Hoist Co., The, Euclid, O.  
Northern Engineering Works, Detroit.

Shaw-Box Crane & Hoist Div. Manning, Maxwell & Moore, Inc., 402 Broadway, Muskegon, Mich.



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**HOISTS**—Monorail  
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Shaw-Hor Crane & Hoist Div. Manning,  
Maxwell & Moore, Inc., 403 Broadway,  
Muskegon, Mich.  
Shepard Niles Crane & Hoist Corp., Mon-  
teur Falls, N. Y.

**HOISTS**—Scraper  
Sullivan Machinery Co., Claremont, N. H.

**HONING MACHINES**  
Micromatic Hone Co., Detroit.

**HOSE**—Flexible Metallic  
American Brass Co., The, Waterbury, Conn.

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Goodrich, B. F., Co., The, Akron, Ohio.  
Goodyear Tire & Rubber Co., Akron, Ohio.  
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sonic-Manhattan, Inc., The, 2 Townsend  
St., Passaic, N. J.

**HYDRANTS**—Fire  
Wood, R. D., & Co., Philadelphia.

**HYDRAULIC MACHINERY**  
Baldwin-Southwark Corp., Southwark Div.,  
Philadelphia.  
Elmes, Chas. F., Engng. Wks., Chicago.  
Hydraulik Gmbh. Duisburg, Germany.  
Lake Erie Engineering Corp., 68 Kenmore  
Sta., Buffalo, N. Y.  
Morgan Engineering Co., The, Alliance, O.  
Wood, R. D., & Co., Philadelphia.

**INGOT MOLDS**  
Shenango Furnace Co., Pittsburgh.  
Shenango-Penn Mold Co., Pittsburgh.  
Snyder, W. F., & Co., Pittsburgh.  
Valley Mould & Iron Corp., Hubbard, Ohio.

**INGOTS**—Aluminum  
Aluminum Co. of America, Pittsburgh.  
Sellsman, Arthur, & Co., Inc., 30 Rock-  
efeller Plaza, E. C. A. Bldg., N. Y. C.

**INGOTS**—Phosphor Bronze  
Phosphor Bronze Smelting Co., The, Phila.  
Del.

**INHIBITORS**  
American Chemical Paint Co., Ambler, Pa.  
Du Pont de Nemours, E. I., & Co., Inc.  
Grasselli Chemicals Dept., Wilmington,  
Del.

**INSTRUMENTS**—Recording  
Brown Instrument Co., The, Philadelphia,  
Pa.  
Leeds & Northrup Co., Philadelphia.

**INSULATION**  
Johns-Manville Corp., 22 East 40th St.,  
New York City.

**IRON**—Genuine Open Hearth Iron  
Newport (Ky.) Rolling Mill Co., The.

**IRON**—Rustless  
Ludlum Steel Co., Watervliet, N. Y.

**JIGS, FIXTURES, DIES, etc.** (See Dies,  
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**KEYS**—Riveted  
Western Wire Prods. Co., St. Louis, Mo.

**KEYSEATING MACHINES**  
Baker Bros., Inc., Toledo, Ohio.  
Davis Keyseater Co., 400 Exchange St.,  
Rochester, N. Y.

**LACING**—Belt, Rawhide or Leather  
Chicago (Ill.) Rawhide Mfg. Co., The,  
1306 Euston Ave.

**LACQUER**  
Sherwin-Williams Co., Cleveland.

**LAGGING**—Insulating  
Quigley Co., Inc., 56 West 45th St.,  
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**LAMPS**—Mercury Vapor  
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**LAPPING MACHINES**  
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**LATHES**—Automatic  
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**LATHES**—Bress  
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**LATHES**—Engine  
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ton Blvd., Chicago.

**LATHES**—Machine  
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Co., Hartford, Conn.

**LATHES**—Rail  
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Mesta Mch. Co., Pittsburgh.  
United Engineering & Fdry. Co., Pgh.

**LATHES**—Second-Hand. (See Clearing  
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**LATHES**—Turret  
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**LAYOUT FLUID**  
Dayton Rogers Mfg. Co., Minneapolis,  
Minn.

**LEAD**—In Oil  
Sherwin-Williams Co., Cleveland.

**LEAD LININGS**  
Diezel Lead Burning Co., Pittsburgh.

**LEATHES**—Cup  
Chicago (Ill.) Rawhide Mfg. Co., The,  
1306 Euston Ave.

**LEVELING MACHINES**  
Actna-Standard Engineering Co., The,  
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Wean Engineering Co., Inc., The, Warren, O.

**LINING**—Converter  
Edge Hill Silica Rock Co., New Brun-  
swick, New Jersey.

**LOCK WASHER MACHINERY**  
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**LOCOMOTIVES**—Electric  
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General Electric Co., Schenectady, N. Y.

**LOCOMOTIVES**—Gasoline  
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**LOCOMOTIVES**—Gas-Electric  
Davenport (Iowa) Locomotive Works.

**LOCOMOTIVES**—Industrial  
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Jeffrey Mfg. Co., The, Columbus, Ohio.  
Plymouth (Ohio) Locomotive Works.

**LOCOMOTIVES**—Steam  
Iron & Steel Products, Inc., Chicago.

**LOCOMOTIVES**—Storage Battery  
Atlas Car & Mfg. Co., The, Cleveland.

**LUBRICANTS**—Crusher & Grinding  
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**Shell's Industrial Lubricants Div., Shell  
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St. Louis, & 50 W. 50th St., N. Y. C.**

**Secony-Vacuum Oil Co., Inc., 26 Broad-  
way, N. Y. C.**

**Sun Oil Co., Philadelphia.**

**Texas Company, The, 135 East 42nd St.,  
N. Y. C.**

**Tide Water Associated Oil Co., 17 Battery  
Place, N. Y. C.**

**LUBRICANTS**—Gear  
Gulf Oil Corp., Gulf Refining Co., Pitts-  
burgh.

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**Secony-Vacuum Oil Co., Inc., 26 Broad-  
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**Sun Oil Co., Philadelphia.**

**Texas Company, The, 135 East 42nd St.,  
N. Y. C.**

**Tide Water Associated Oil Co., 17 Battery  
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**LUBRICANTS**—Railroad  
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burgh.

**Shell's Industrial Lubricants Div., Shell  
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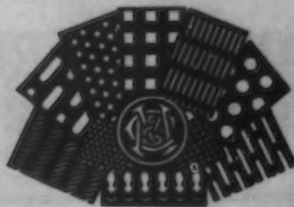
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Dreis & Krump Mfg. Co., Chicago.  
Niagara Mch. & Tool Wks., Buffalo, N. Y.

**PRESSES—Friction Screw**  
Schatz Mfg. Co., The, Poughkeepsie, N. Y.  
Zeh & Hahnemann Co., Newark, N. J.

**PRESSES—Hydraulic**  
Baldwin-Southwark Corp., Southwark Div., Philadelphia.  
Elmes, Chas. F., Engng. Wks., Chicago.  
Farrel-Birmingham Co., Inc., Ansonia, Conn.

**Hydraulic Gmbh, Duisburg, Germany.**  
Lake Erie Engineering Corp., 68 Kenmore St., Buffalo, N. Y.  
Mesta Mch. Co., Pittsburgh.  
Morgan Engineering Co., The, Alliance, O.  
Oilgear Co., The, 1311 W. Bruce, Milwaukee.  
Wood, B. D., & Co., Philadelphia.

**PRESSES—Power**  
Bliss, E. W. Co., Toledo, Ohio.  
Baird Mch. Co., The, Bridgeport, Conn.  
Cincinnati (Ohio) Shaper Co., The.  
Dreis & Krump Mfg. Co., Chicago, Ill.  
Farrel-Birmingham Co., Inc., Ansonia, Conn.

**Hyman, Joseph, & Sons, Phila.**  
Manville, E. J., Mch. Co., Waterbury, Ct.  
New Albany (Ind.) Mch. Mfg. Co.  
Niagara Machine & Tool Wks., Buffalo, N. Y.  
Pels, Henry, & Co., Inc., 90 West St., N. Y. C.

**Schatz Mfg. Co., The, Poughkeepsie, N. Y.**  
Standard Machinery Co., Providence, R. I.  
V & O Press Co., Hudson, N. Y.  
Waterbury (Ct.) Farrel Fdry. & Mch. Co., The.

**Zeh & Hahnemann Co., Newark, N. J.**

**PRESSES—Trimming**  
Bliss, E. W. Co., Toledo, Ohio.  
Erie (Pa.) Foundry Co.

**PULLEYS—Iron, Solid & Split**  
Falls Clutch & Mchry. Co., The, Cuyahoga Falls, Ohio.

**Jones, W. A., Fdry. & Mch. Co., 4401 Roosevelt Rd., Chicago.**

**PULLEYS—Magnetic**  
Cutler-Hammer, Inc., Milwaukee.

**PULLEYS—Vacuum Cup**  
Vacuum Cup Metal Pulley Co., Inc., Detroit, Mich.

**PULVERIZERS**  
American Pulverizer Co., 1439 Macklind Ave., St. Louis, Mo.

Jeffrey Mfg. Co., The, Columbus, Ohio.  
Whiting Corp., Harvey, Ill.

**PUMPS—Aid Resisting**  
Durlon Co., Inc., The, 438 N. Findlay St., Dayton, Ohio.

**PUMPS—Beller Feed**  
Aldrich Pump Co., The, Allentown, Pa.  
Ingersoll-Rand Co. (Cameron), 11 Broadway, N. Y. C.

**PUMPS—Centrifugal**  
Aldrich Pump Co., The, Allentown, Pa.  
Fairbanks, Morse & Co., Chicago.  
Ingersoll-Rand Co. (Cameron), 11 Broadway, N. Y. C.

**Pennsylvania Pump & Compressor Co., Easton, Pa.**

**Rumsey Pump Corp., Seneca Falls, N. Y.**  
Bushman Machinery Co., Cincinnati.  
Tomkins-Johnson Co., The, Jackson, Mich.  
Worthington Pump & Machinery Corp., Harrison, N. J.

**PUMPS—Coolant**  
Bushman Machinery Co., Cincinnati.

**PUMPS—Electric**  
Fairbanks, Morse & Co., Chicago.

**PUMPS—Hydraulic**  
Aldrich Pump Co., The, Allentown, Pa.  
American Engineering Co., Philadelphia.  
Elmes, Chas. F., Engng. Wks., Chicago.  
Fairbanks, Morse & Co., Chicago.  
Lake Erie Engineering Corp., 68 Kenmore St., Buffalo, N. Y.

**Rumsey Pump Corp., Seneca Falls, N. Y.**  
Worthington Pump & Machinery Corp., Harrison, N. J.

**PUMPS—Power**  
Fairbanks, Morse & Co., Chicago.  
Worthington Pump & Machinery Corp., Harrison, N. J.

**PUMPS—Rotary Positive, Centrifugal & Turbine**  
Crane Co., Chicago.

**PUMPS—Steam**  
Fairbanks, Morse & Co., Chicago.  
Ingersoll-Rand Co. (Cameron), 11 Broadway, N. Y. C.

**Worthington Pump & Machinery Corp., Harrison, N. J.**

**PUMPS—Vacuum**  
Pennsylvania Pump & Compressor Co., Easton, Pa.

**Worthington Pump & Machinery Corp., Harrison, N. J.**

**PUNCHES & DIES**  
Cleveland Steel Tool Co., The, 660 E. 32d St., Cleveland, Ohio.

**PUNCHING AND SHEARING MACHINES**  
Beatty Mch. & Mfg. Co., 936—150th St., Hammond, Ind.

**Bertsch & Co., Cambridge City, Ind.**  
Cincinnati (Ohio) Shaper Co., The.  
Excelsior Tool & Mach. Co., E. St. Louis, Ill.

**G. D. S. Shearing & Punching Machine Co., 101 Walker St., N. Y. C.**  
Niagara Machine & Tool Works, Buffalo, N. Y.

**Pels, Henry, & Co., Inc., 90 West St., N. Y. C.**  
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**Hoskins Mfg. Co., Detroit, Mich.**  
Leeds & Northrup Co., Philadelphia.

**RAIL SPLICE BARS**  
Ames, W., & Co., Jersey City, N. J.

**RAILS**  
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

**Foster, L. B., Co., Inc., Pittsburgh.**  
Frank, M. K., 480 Lexington Ave., N. Y. C.  
Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

**RAILS—Relaying**  
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**Iron & Steel Products, Inc., Chicago.**  
Sherwood, E. C., 50 Church St., N. Y. C.

**RAILWAY EQUIPMENT & SUPPLIES**  
Fairbanks, Morse & Co., Chicago.  
Iron & Steel Products, Inc., Chicago.

**REAMERS**  
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Greenfield (Mass.) Tap & Die Corp.

**Morse Twist Drill & Mch. Co., New Bedford, Mass.**  
Pratt & Whitney Div. Niles-Bement-Pond Co., Hartford, Conn.

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**RECORDERS—Furnace Atmosphere**  
Brown Instrument Co., The, Philadelphia, Pa.

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Littell, F. J., Mch. Co., Chicago.

**REFRACTORIES**  
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**Cleveland (Ohio) Quarries Co., The.**  
Illinois Clay Products Co., Joliet, Ill.  
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**REINFORCEMENT FABRIC—Concrete**  
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**RODS**—Brass  
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**RODS**—Magnesium Alloys  
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Riverside (N. J.) Metal Co.  
Seymour (Conn.) Mfg. Co.

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Parker Rust-Proof Co., 2186 Milwaukee Ave., Detroit.

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**RUST PROOFING PROCESS**  
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**SAND BLAST STEEL SHOT**  
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**SCREENS**—Perforated Metal  
Chicago Perforating Co., 2440 W. 24th Place, Chicago, Ill.



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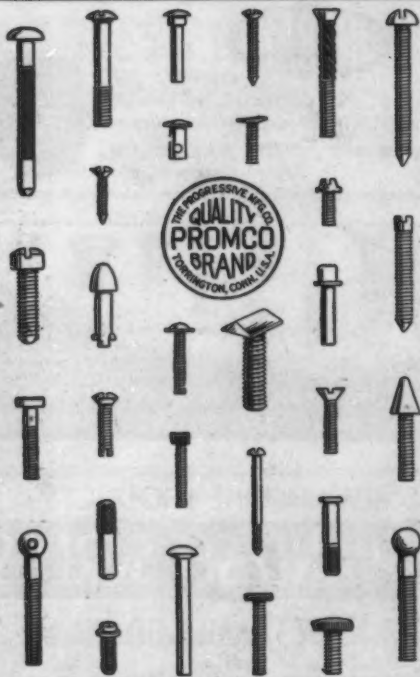
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Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

Weirton (W. Va.) Steel Co.  
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Alan Wood Steel Co., Conshohocken, Pa.  
American Rolling Mill Co., Middletown, O.

Bethlehem (Pa.) Steel Co.  
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Granite City (Ill.) Steel Co.  
Great Lakes Steel Corp., Detroit.

Newport (Ky.) Rolling Mill Co., The.  
Ryerson, Jos. T., & Son, Inc., Chicago.

Weirton (W. Va.) Steel Co.  
Worth Steel Co., Claymont, Del.

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Phosphor Bronze Smelting Co., The, Phila.  
Revere Copper & Brass, Inc., 230 Park Ave., N. Y. C.

Riverside (N. J.) Metal Co.  
Seymour (Conn.) Mfg. Co.

SHEETS—Chrome  
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

SHEETS—Chrome Nickel  
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

SHEETS—Cold Rolled  
American Rolling Mill Co., Middletown, O.

Bethlehem (Pa.) Steel Co.  
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Great Lakes Steel Corp., Detroit.  
Inland Steel Co., Chicago.

Republic Steel Corp., Cleveland, Ohio.  
Ryerson, Jos. T., & Son, Inc., Chicago.

Weirton (W. Va.) Steel Co.



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Newport (Ky.) Rolling Mill Co., The.

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Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago

Newport (Ky.) Rolling Mill Co., The.  
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**SHEETS—Enameling**  
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Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago

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Newport (Ky.) Rolling Mill Co., The.  
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Ryerson, Jos. T. & Son, Inc., Chicago.  
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Worth Steel Co., Claymont, Del.

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Republic Steel Corp., Cleveland, Ohio.  
Youngstown (Ohio) Sheet & Tube Co., The.

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Bethlehem (Pa.) Steel Co.

Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago

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Continental Steel Corp., Kokomo, Ind.  
Granite City (Ill.) Steel Co.

Inland Steel Co., Chicago.  
Newport (Ky.) Rolling Mill Co., The.  
Republic Steel Corp., Cleveland, Ohio.

Ryerson, Jos. T. & Son, Inc., Chicago.  
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Horsburgh & Scott Co., 5112 Hamilton Ave., Cleveland.

James, D. O., Mfg. Co., Chicago.  
Jones, W. A., Fdry. & Mch. Co., 4401 Roosevelt Rd., Chicago.  
Link-Belt Co., Chicago.  
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Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.

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Central Iron & Steel Co., Harrisburg, Pa.  
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Dunbar Bros. Co., Div. of Associated Spring Corp., Bristol, Conn.

E S M C O Auto Products Corp., Bush Terminal Bldg. 27, Bklyn., N. Y.

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Torrington (Conn.) Company  
Truscon Steel Co., Pressed Steel Div., Cleveland.



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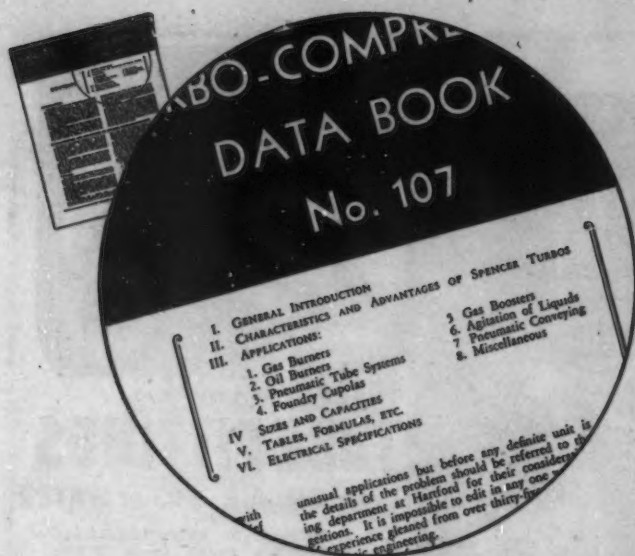
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 Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., The, 2 Townsend St., Passaic, N. J.

**TANKS—Welded**  
 Blaw-Knox Co., Pittsburgh.  
 National Tube Co. (U. S. Steel Corp. Subsidiary), Pittsburgh.  
 Petroleum Iron Works Co., The, Sharon, Pa.  
 Scaife, Wm. B., & Sons Co., Pittsburgh.

**TAPPING MACHINES**  
 Baker Bros. Inc., Toledo, Ohio.  
 Ex-Cell-O Corp., 1200 Oakman Blvd., Detroit.

**TAPS—Collapsing**  
 Landis Mach. Co., Inc., Waynesboro, Pa.  
 Murchey Machine & Tool Co., Detroit.  
 National Acme Co., The, Cleveland.

**TAPS AND DIES**  
 Greenfield (Mass.) Tap & Die Corp.  
 Landis Mach. Co., Inc., Waynesboro, Pa.  
 Morse Twist Drill & Mch. Co., New Bedford, Mass.  
 Pratt & Whitney Div. Niles-Bement-Pond Co., Hartford, Conn.

**TEES—See Angles, Beams, Channels and Tees**

**TELEPHONES—Interior**  
 Screw Machine Products Corp., Prov., R. I.

**TERNE PLATES**  
 Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.  
 Weirton (W. Va.) Steel Co.

**TESTING MACHINES—Materials**  
 Baldwin-Southwark Corp., Southwark Div., Phila.

**THERMOMETERS—Recording**  
 Brown Instrument Co., The, Philadelphia, Pa.  
 Leeds & Northrup Co., Philadelphia.

**THERMOSTATIC—Bimetal**  
 Chace, W. M., Co., 1605 Beard Ave., Detroit.

**THREAD CUTTING TOOLS—See Die Taps**

**THREAD ROLLING MACHINES**  
 Manville, E. J., Mch. Co., Waterbury, Ct.  
 Nilson, A. H., Mch. Co., Bridgeport, Ct.  
 Waterbury (Ct.) Farrel Fyfe & Mch. Co., The.

**THREADING MACHINES**  
 Eastern Mesh. Screw Corp., New Haven, Conn.

**THREADING MACHINES—Automatic**  
 Landis Mch. Co., Inc., Waynesboro, Pa.

**THREADING MACHINES—Belt**  
 Murchey Machine & Tool Co., Detroit.

**TIE PLATES**  
 Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.  
 Weirton (W. Va.) Steel Co.

**TIES—SALE**  
 Acme Steel Co., Chicago, Ill.

**TIMING INSTRUMENTS**  
 Stillman, M. J., Co., Inc., Chicago.

**TIN PLATE**  
 Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.  
 Granite City (Ill.) Steel Co.  
 Inland Steel Co., Chicago.

**TIN PLATE MACHINERY**  
 Aetna-Standard Engineering Co., The, Youngstown, Ohio.  
 Wean Engineering Co., Inc., The, Warren, Ohio.

**TINNING EQUIPMENT—Sheets**  
 Wean Engineering Co., Inc., The, Warren, Ohio.

**TONGS—Automatic**  
 Heppenstall Co., Pittsburgh.

**TOOL BITS**  
 Carboly Co., Inc., 2985 E. Jefferson Ave., Detroit.

**TOOL HOLDERS**  
 Armstrong Bros. Tool Co., Chicago.  
 Williams, J. H., & Co., Buffalo, N. Y.

**TOOLS—Lathes**  
 Armstrong Bros. Tool Co., Chicago.  
 Carboly Co., Inc., 2985 E. Jefferson Ave., Detroit.

**TOOLS—Metal Cutting**  
 Carboly Co., Inc., 2985 E. Jefferson Ave., Detroit.  
 Michigan Tool Co., Detroit.  
 Pratt & Whitney Div. Niles-Bement-Pond Co., Hartford, Conn.

**TOOLS—Precision**  
 Starrett, L. S., Co., Athol, Mass.

**TOOLS—Safety, Steel Stamps**  
 Cunningham, M. E., Co., Pittsburgh.

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456 Terrace (Formerly Scheeler's Sons) Buffalo, N. Y.

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**TOOLS**—Tungsten Carbide Carboly Co., Inc., 2985 E. Jefferson Ave., Detroit.  
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Air Reduction Sales Co., 60 East 42nd St., N. Y. C.  
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**TRAILERS**—Industrial—See Trucks, Tractors and Trailers—Industrial

**TRAMRAILS**—Overhead Systems  
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Harnischfeger Corp., 4401 W. National Ave., Milwaukee.

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**TRANSCRIBING MACHINES**  
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**TRANSMISSIONS**—Hydraulic  
American Engineering Co., Philadelphia, Oilgear Co., The, 1311 W. Bruce St., Milwaukee.

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**TUNGSTEN CARBIDE**  
Carboly Co., Inc., 2985 E. Jefferson Ave., Detroit.

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Morse Twist Drill & Mch. Co., New Bedford, Mass.

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Durrion Co., Inc., The, 438 N. Findlay St., Dayton, Ohio.

**VALVES**—Air Blast for Presses  
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**VALVES**—Air & Hydraulic Control  
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**VALVES**—Gas, Water and Steam  
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**VALVES**—Hydraulic  
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**VALVES**—Pump, Rubber  
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**VANADIUM**  
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**VARNISH**—Acid Resisting  
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**WASHERS**—Iron or Steel  
Sessions, J. H., & Son, Bristol, Conn.

**WASHERS**—Leather  
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**WASHERS**—Lock  
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**Butcher & Hart Mfg. Co.**, Toledo, Ohio.  
**Eaton Mfg. Co.**, Massillon, Ohio.  
**Heis & Heis, Inc.**, 33-34th St., Brooklyn, N. Y.  
**Hobbs Mfg. Co.**, Worcester, Mass.  
**Houde Engineering Corp.**, Buffalo, N. Y.  
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National Lock Washer Co., The, Newark, N. J., and Milwaukee, Wis.  
Philadelphia Steel & Wire Corp., Germantown, Philadelphia, Pa.  
Positive Lock Washer Co., The, Newark, N. J.

Spring Washer Industry, 616 Wrigley Bldg., Chicago, Ill.  
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**WASHING MACHINES—For Metal Parts**  
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**WATER SOFTENERS AND PURIFIERS**  
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**WELDING CONTACTORS**  
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**WELDING CONTACTS—Resistance**  
Electroloy Co., Inc., 50 Church St., New York City.

**WELDING AND CUTTING MACHINES AND EQUIPMENT—Oxy-Acetylene**  
Air Reduction Sales Co., 60 East 42nd St., N. Y. C.

Linde Air Prods. Co., The., 30 East 42nd St., N. Y. C.  
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American Brass Co., The, Waterbury, Conn.  
Michigan Wire Cloth Co., 2117 Howard St., Detroit.

Phosphor Bronze Smelting Co., The, Phila.  
Revere Copper & Brass, Inc., 230 Park Ave., N. Y. C.

Riverside (N. J.) Metal Co.  
Seymour (Conn.) Mfg. Co.

**WIRE—Electric Heat Resisting**  
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**WIRE—Flat, Round Square or Special Shapes**  
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Pago Steel & Wire Div., American Chain & Cable Co., Inc., Monessen, Pa.

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Roebbing's, John A., Sons Co., Trenton, N. J.  
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**WIRE—Piano and Music**  
Webb Wire Works, New Brunswick, N. J.

Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.

**WIRE—Rustless**  
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**WIRE—Special Drawn Shapes**  
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**WIRE—Spring**  
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Barnes, Wallace Co., The, Div. of Associated Spring Corp., Bristol, Conn.

Columbia Steel Co. (U. S. Steel Corp. Subsidiary), San Francisco, Calif.

Jones & Laughlin Steel Corp., Pittsburgh.

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**WIRE—Stainless Steel**  
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Webb Wire Works, New Brunswick, N. J.

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Wickwire Brothers, Cortland, N. Y.

**WIRE—Water-proof Rubber Insulated**  
Simplex Wire & Cable Co., Cambridge A. Boston, Mass.

**WIRE—Welding**  
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American Steel & Wire Co. (U. S. Steel Corp. Subsidiary), Chicago.

Lincoln Electric Co., The, Cleveland.

Manganese Steel Forge Co., Phila., Pa.  
Maurath, Inc., 7400 Union Ave., Cleveland.

Pago Steel & Wire Div., American Chain & Cable Co., Inc., Monessen, Pa.

Pittsburgh (Pa.) Steel Co.  
Revere Copper & Brass, Inc., 230 Park Ave., N. Y. C.

Roebbing's, John A., Sons Co., Trenton, N. J.

Seneca Wire & Mfg. Co., The, Fostoria, Ohio.

Una Welding, Inc., Cleveland, Ohio.

Wickwire Brothers, Cortland, N. Y.

Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.

Wilson Welder & Metals Co., Inc., 60 E. 42nd St., New York City.

**WIRE—Zinc**  
Platt Bros. & Co., The, Waterbury, Conn.

**WIRE CLOTH**  
Audubon Wire Cloth Corp., Phila., Pa.

Buffalo (N. Y.) Wire Wks. Co., Inc.

Ludlow-Saylor Wire Co., St. Louis, Mo.

Michigan Wire Cloth Co., 2117 Howard St., Detroit, Mich.

Roebbing's, John A., Sons Co., Trenton, N. J.

Wickwire Bros., Cortland, N. Y.

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Manville, E. J., Mch. Co., Waterbury, Ct.

Nilson, A. H., Mch. Co., Bridgeport, Ct.

Sleeper & Hartley, Inc., Worcester, Mass.

**WIRE MILL MACHINERY AND EQUIPMENT**  
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Sleeper & Hartley, Inc., Worcester, Mass.

Waterbury (Ct.) Farrel Fdry. & Mch. Co., The.

**WIRE NAIL MACHINERY**  
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**WIRE PRODUCTS**  
American Spring & Mfg. Corp., Holly, Mich.

American Steel & Wire Co. (U. S. Steel Corp. Subsidiary), Chicago.

Buffalo (N. Y.) Wire Wks. Co., Inc.

Eastern Tool & Mfg. Co., Bloomfield, N. J.

Hindley Mfg. Co., Valley Falls, R. I.

Pittsburgh (Pa.) Steel Co.

U. S. Steel Wire Spring Co., Cleveland, O.

Wickwire Bros., Cortland, N. Y.

Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.

**WIRE ROPE**  
American Steel & Wire Co. (U. S. Steel Corp. Subsidiary), Chicago.

Columbia Steel Co. (U. S. Steel Corp. Subsidiary), San Francisco, Calif.

Leschen, A., & Sons Rope Co., St. Louis, Mo.

Roebbing's, John A., Sons Co., Trenton, N. J.

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Armstrong Bros. Tool Co., Chicago.

Williams, J. H. & Co., Buffalo, N. Y.

**WRENCHES—Pipe**  
Greenfield (Mass.) Tap & Die Corp.

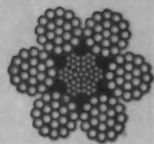
**WRENCHES—Pneumatic**  
Interroll-Rand Co., 11 Broadway, N. Y. C.

**ZINC—SLAB (Spelter)**  
New Jersey Zinc Co., The, 160 Front St., N. Y. C.

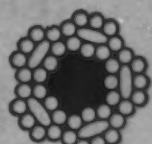
**ZINC—Strip**  
Platt Bros. & Co., The, Waterbury, Conn.

**ZIRCONIUM METAL & ALLOYS**  
Electro Metallurgical Sales Corp., 36 E. 42nd St., N. Y. C.

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JUST ISSUED

**Automatics**—No. 2-G Brown & Sharpe  
2 1/2", 3 1/2", 4 1/2" Gridley Single Spdl.  
**Boring Machines**, 5" bar, N-B-P Floor Borer  
5" Bar Newton Portable  
No. 3 Hamilton, 3 1/2" bar  
No. 2 Coffman, 3 1/2" bar  
No. 36—Rochester Floor 3 1/2" bar  
No. 3A Universal, 3" bar  
No. 1 Cleveland, 2 1/2" bar  
**Boring Mills**, 24", 36", 42" Bullard "New Era"  
36" King  
42" and 48" Colburn  
36", 52" and 60" King  
54", 60" Colburn  
**Drills**—1, 2, 3, 4 spdl. Leland-Gifford  
1, 2, 3, 4, 6 Spdl. Henry & Wright  
32" Cinn.-Bickford Sild. Hd.  
No. 2 Colburn, 1, 2, 3, & 4 Spdl.  
Nos. 121, 314, 513 Baker  
No. 210—1 and 3 spdl. Barnes  
No. D-5 Colburn  
No. 2 Western Multiple  
No. 14 Nates Multiple  
No. 4 Baugh Multiple  
**Radials**—4" Cinn.-Bickford Plain  
4" American Triple Purpose  
5" American full univ., M.D.  
6" Western Triple Grd.  
6" American Triple Purpose  
6" Cinn.-Bickford full univ.  
**Gear Cutters**, No. 18-H Gould & Eberhardt  
No. 2, No. 3, No. 12 Barber-Colman  
No. 18 H Gould & Eberhardt  
11" Gleason Bevel Gear Planer  
No. 3—26" Brown & Sharpe  
No. 4—48" Brown & Sharpe  
No. 6—60" No. 6—72" Brown & Sharpe  
Nos. 6, 61, 62, 65, 615, 625 Fellows  
12"x72" G. & E. Rack Cutter  
**Grinders**, Helm Contours  
10"x36", 52" Landis, plain  
20"x108" Landis, plain M.D.  
26"x96" Landis, plain  
No. 13 B. & S. Univ. Cutter & Tool  
4—12"x66" Landis Universal  
No. 20 Head Internal  
No. 1 1/2" Landis, Internal  
No. 25 Head Rotary Surf  
No. 10 Blanchard, M.D.  
No. 16-A Blanchard Surface  
15"x17"x9", 8" Norton, O.S. surf., mag. chuck

### MOTOR DRIVE NORTON GRINDERS

8"x32"	10"x96"
10"x18"	14"x36"
10"x24"	14"x50"
10"x36"	14"x72"
10"x50"	18"x50"
10"x72"	18"x96"
18"x144"	

**Lathes**, No. 3 Lodge & Shipley Dismatic  
14"x 6" American, grd. hd., Taper Attach.  
14"x 6" Lodge & Shipley  
18"x 8" Lodge & Shipley, Taper Attach.  
18"x 8" Lodge & Shipley, sel. grd. hd., T.A.  
20"x14" L. & S., sel. grd. hd.  
24"x10", 14" American  
24"x12" Lodge & Shipley, sel. grd. hd.  
25"x26" LeBlond Heavy Duty  
26"x10", 14" LeBlond Crankshaft  
30"x20" American grd. hd.  
36"x18" Lodge & Shipley, patent head  
36"x30" Rahn Larmon, grd. head  
54"x23" Johnson, triple geared  
66"x21" Putnam, triple geared  
**Millers**, No. 24 Hyv. Ohio, plain  
No. 2, No. 3, No. 3-S Cincinnati, plain  
No. 2-B, No. 3-B, No. 4-B, B. & S., plain  
No. 4 Komp Smith Maxi-Miller, plain  
No. 4 and No. 5 Cincinnati, plain  
No. 1 1/2", No. 2 B. & S. Universal  
No. 2-BB Milwaukee Universal  
No. 3, No. 4 Cincinnati Universal  
No. 1 1/2", No. 3-B Milwaukee Vert.  
No. 2, No. 3 Cincinnati, H.P. Vert.  
No. 4 Milwaukee Vert.  
No. 5—48" Cincinnati Hydromatic  
No. 4 and No. 8 Lees-Bradner Thread  
Hanson Whitney Thread  
24"x24"x12" Ingersoll Slab  
36"x36"x12" Newton Duplex  
38"x44"x20" Ingersoll Slab  
48"x36"x10" Ingersoll Adj. Rail  
**Planers**, 24"x24"x6" American  
30"x30"x 8" and 18" Cincinnati  
30"x30"x14" Gray, Arr. Rev., M.D.  
36"x36"x12" and 24" Gray  
36"x36"x 8", 12", 18" Cincinnati  
36"x36"x14"—24" Cleveland Open Side  
42"x42"x30" Niles-Bement-Pond, arr. rev., M.D.  
48"x48"x10" Detrick & Harvey, O. S.  
48"x48"x14" Liberty Open Side  
48"x48"x18" Niles-Bement-Pond  
60"x48"x18" Gray, arr. rev., M.D.  
72"x60"x18" American  
**Presses**, No. 106 Bliss Dble. Crank  
No. 173-A Consolidated Dble. Crank  
**Shapers**, 16" Gould & Eberhardt  
18" & 20" Stockbridge  
20" & 24" Gould & Eberhardt  
**Turret Lathes** No. 4 W. & S. Univ. Turret  
No. 3 Cinn.-Acme, A.C. & B.F.  
No. 3-A Warner & Swasey  
No. 4-A Warner & Swasey 7 1/2" H.S.  
No. 4-L Gisholt 9 1/2" H.S.

**HILL-CLARKE**  
MACHINERY CO  
647 Washington Blvd. Chicago

## CAPITAL SAVINGS!

### BORING MILLS—Horizontal

CLEVELAND No. 1  
BEAMAN & SMITH 5" and 6" bar  
DETRICK & HARVEY 5" bar

### BORING MILLS—Vertical

BULLARD 24"  
BAUGH 53" 2 hds.  
KING 60" 2 swivel heads  
NILES BEMENT POND 7-10" Extension  
NILES BEMENT POND 42"—44"—51"—53"  
POND 90" 2 hds.

### PLANERS

AMERICAN 36"x36"x20" 3 hds.  
CINCINNATI 36"x36"x12" 2 hds.  
NBP 48"x48"x10" 4 hds.  
BETTS 10"x18" 4 hds.

### LATHES

PITTSBURGH 36"x28", grd. hd.  
PUTNAM 36"x28", 3 stop cone, DBG.  
PUTNAM 36"x28", Grd. Head—Nearly New  
BRIDGEFORD 36"x60" comb. boring and turning  
BRIDGEFORD 36"x60", boring  
AMERICAN 36"x21", grd. hd., QCG.  
GREAVES KLUSSMAN 18"x10" grd. motor-in-base  
McCABE 27-49x18" Double Spindle  
LUDGE & SHIPLEY 24"x10" cone dr.  
GREAVES KLUSSMAN 16"x8" motor-in-base  
LUDGE & SHIPLEY 36"x10" grd. hd.

### MILLING MACHINES

ROWBOTTOM 24" Cam Milling Machine  
CINCINNATI 24", 48" Automatic  
INGERSOLL No. 3 Combined heavy duty Vert.  
INGERSOLL 24"x24"x12", planer type  
INGERSOLL 24"x24"x12", slab  
NEWTON No. 2 Ver. spdl. keyseat  
BROWN & SHARPE No. 4 Universal cone dr.  
CINCINNATI Nos. 2, 3, 4 Plain  
LEE BRADNER No. 4 thread  
PRATT & WHITNEY 4 1/2"x12, 6x48, 6x80 thread  
BECKER C-I and C Vertical  
KEARNEY & TRECKER No. 1 Plain standard-  
ized spdl.

**1—AMERICAN 36" x 21"**  
all Geared Head Engine  
Lathe—NEARLY NEW

### DRILL PRESSES

NATCO No. 12, No. 13, No. 22 Multiple spdl.  
NATCO CII Drill—mechanical feeds  
NATCO CISH Drill—hydraulic feeds  
PRATT & WHITNEY No. 12 rest. head

### DRILLS—RADIAL

CINCINNATI BICKFORD 5" full Univ.  
CINCINNATI BICKFORD 9" Pl. SPD.  
DRESSE 3" and 5" Pl. SPD.  
REED PRENTICE 4" Pl.  
N.B.P. 8" Pl. SPD.

### GEAR CUTTING EQUIPMENT

BROWN & SHARPE No. 6, 72" Gear Cutter  
BARBER & COLMAN Nos. 3 and 12 Gear Hobbers  
BROWN & SHARPE No. 34 Gear Hobber  
CLEVELAND 8 spdl. Spine Hobber  
GLEASON 15" Spiral Bevel Gear Finisher  
GLEASON 10" Spiral Bevel Gear  
FELLOWS No. 8B Burnisher  
LEES BRADNER Lapper, cap. 1 1/4"x8"

### GRINDERS

BRYANT No. 3 Internal  
BLANCHARD Nos. 10, 16 surface  
HEALD Nos. 50, 55, 60, 65 int.  
HEALD No. 72 Hydr.; 72-A-3 Sizematie  
LANDIS 10x24, 10x36, 10x72  
LANDIS 20"x10" Plain  
LANDIS 20x132 cylindrical  
NORTON 14x72, 14x96 Plain Cyl.  
NORTON type B81 14x30-36" crankpin  
DIAMOND 84" Face  
PRATT & WHITNEY No. 14 surface  
SPRINGFIELD No. 7 Grinder

### MISCELLANEOUS

CLEVELAND 1 1/2": 2-2 1/2": 2 1/2"-2 3/4" Model "A"  
CLEVELAND Univ. relieving lathe  
TREADWELL 12" pipe maul  
COCHRANE & BLY No. 14 Univ. Shaper & Miller  
LIBBY 18" Model "A", 26"—7 1/2" hole  
HILLES & JONES No. 5 Bending Rolls  
PRATT & WHITNEY No. 12 Profiler, grd.

ask for details

1000 other machines in stock

**MOREY**  
MACHINERY CO., INC  
410 BROOME ST. NEW YORK

## AIR COMPRESSORS

67", 6"x6" Chicago Pneumatic.  
92", 7"x6" Ingersoll Rand.  
106", 7 1/2"x6" Chicago Pneumatic.  
138", 8"x8" Ingersoll Rand.  
173", 9"x8" Chicago Pneumatic.  
245", 10"x10" Ingersoll Rand.  
355", 12"x10" Ingersoll Rand.  
448", 14"x5"x10" Bury 2 stage.  
706", 17"x9 1/2"x12" Sullivan WJ3 angle compound,  
two stage.

## RADIAL DRILLS

2 1/2" Morris.  
3" Drees.  
3 1/4" Western.  
4" Hammond.  
4" Western.  
4" Mueller.  
5" Western.  
6" Western.  
6" Niles Bement Pond universal.  
8" Western.

## SHAPERS

7" Rhodes.  
16" Gould & Eberhardt.  
16" Ohio.  
16" Cincinnati.  
24" Gould & Eberhardt.  
24" Potter & Johnston universal.  
24" Walcott.  
24" Cincinnati shaper planer.

## SHEARS

4'x3/16" Niagara No. 748 squaring.  
10'x16 ga. Bertsch squaring.  
No. 15 Niagara rotary.  
30" tht. Pettigell No. 14 rotary.  
No. 16M Marshalltown throats.  
No. 1 Gray sheet metal cutter.  
6" tht. Campbell nibbler, 10 ga.  
12" tht. Campbell nibber, 1/4".

## PRESSES

No. 19 Bliss OBI.  
No. C4 Ferracute OBI.  
No. 75 Toledo openback.  
Nos. 55, 56 & 58 1/2 Toledo.  
Nos. 64 & 65 Consolidated.  
Nos. 1 1/2 & 5A Bliss toggle.  
No. 266 Consolidated cam draw.  
150 ton Ferracute coining.  
600 ton Cleveland coining.

2000 tools in stock. Send for  
list.

**MILES**  
MACHINERY COMPANY  
SAGINAW, W.S.  
MICHIGAN

**BROWN & SHARPE GEAR CUTTER No. 5—60"**  
DIAMOND SURFACE GRINDER 16 x 50 BELT  
DRIVEN.

**GARDNER No. 24 HORIZONTAL DISC  
GRINDER 53".**

**BROWN & SHARPE No. 2-B PLAIN MILLER  
—BELTED MOTOR DRIVE.**

**CINCINNATI PLAIN MILLERS—No. 2 and 3  
CONE DRIVE**

**AVEY BALL BEARING DRILLS—2 and 3 spdl  
No. 2 Taper.**

**CINCINNATI AUTOMATIC MILLER—24".**

**INDIANAPOLIS MACHINERY  
& SUPPLY CO., INC.**

1950-68 South Meridian Street, Indianapolis, Indiana

## BORING MILL

(POST TYPE—DOUBLE COLUMN.)

6" Spindles N-B-P. Gear plate 28"x10". Also sepa-  
rate Milling Attachment, three motors of 220 V. DC.  
Weight 40 Tons. Excellent condition—immediate  
shipment.

## TRIPLE COMB. PUNCHES & SHEARS

Pols No. 16-sp. Capacity 1 1/16"x5/8", high gap  
with triple gap punch att., for MD.  
Buffalo No. 25Ux24", cap. 1"x5/8", for MD.

## ANGLE SHEAR

6"x8"x5/8" Killing Double Shaft, on turntable, MD.

**MARR-GALBREATH**  
MACHINERY CO.  
55 Water Street, PITTSBURGH, PA.



# CONSIDER GOOD USED EQUIPMENT FIRST

IMMEDIATE DELIVERY IS AN IMPORTANT FACTOR TODAY

## AIR COMPRESSORS

300 cu. ft. 10"x5"x10" Chicago Pneumatic Class OCB Belt Driven. 110-115 lbs. Air Pressure  
529 cu. ft. 14"x12" Chicago Pneumatic Class NSBE Motor Driven. 100 lbs. Air Pressure  
1469 cu. ft. 14"x12"x16" Burr Class VCCE Motor Driven. Suitable for 100 lb. Air Pressure

## BALERS

Logemann Hydraulic, arranged for geared motor drive. Complete with horizontal 3 plunger 2 stage hydraulic pump. Size of Bale 1'x1'x14"  
Logemann Hydraulic, arranged for geared motor drive. Complete with vertical single acting triplex pump. Size of Bale 4"x4"x11"  
200 ton Watson Stillman Hydraulic, Motor Drive. Complete with Logemann horizontal 3 plunger hydraulic pump. Size of Bale 20"x10"x6"

## BENDING ROLLS—PYRAMID TYPE

7'2" Hilles & Jones, Motor Driven. Top Roll 13" dia. Bottom Rolls 10 1/2" dia. Capacity 1/4" Plate  
10' McCabe, Motor Driven. Top Roll 10 1/2" dia. Bottom Rolls 8 1/2" dia. Capacity 1/4" Plate  
12' Plate Bending Roll, Motor Driven. Top Roll 18" dia. Bottom Rolls 14" dia. Capacity 1"  
20' Wickes, Motor Driven. Top Roll 20" dia. Bottom Rolls 14" dia. Capacity 1/4" Plate  
25'6" Niles, Arranged for Motor Drive. Top Roll 24 1/2" dia. Bottom Rolls 18" dia. Capacity 1"  
26' Williamette, Motor Driven. Top Roll 28" dia. Bottom Rolls 20" dia. Capacity 1" Plate  
30' Southwark, Motor Driven. Top Roll 36" dia. Bottom Rolls 23" dia. Capacity 1 1/2" Plate

## DRAW BENCH

20,000 lb. Brightman Chain Draw Bench, Arranged for Motor Drive. Length of travel for grip about 22'. Length of bench overall 33'6"

## PRESSES

No. 94 1/2 C Toledo Straight Side, 6" Stroke. Distance between uprights 48"  
No. 424 Hamilton Straight Side, 9" Stroke. Distance between uprights 48"  
800 ton Hamilton Straight Side, 8" Stroke. Distance between uprights 40"  
No. 268 1/2 Toledo Toggle Drawing. Stroke of Blankholder 15 1/2". Stroke of Punch Slide 25". Bolster Plate 60 1/2"x84"  
No. 796 1/2 Toledo Toggle Drawing. Stroke of Blankholder 21 1/2". Stroke of Punch Slide 33". Bolster Plate 60"x108"

## SAW

52" Ryerson High Speed Friction Saw, Hydraulic Feed, Motor Driven. Work Table 24"x36"

## CRANES—A.C.

### OVERHEAD ELECTRIC TRAVELING

3 ton P. & H., 29'6" span, Motors 220/3/60  
15 ton Whiting, 45' span, Motors 220/3/60  
10 ton Whiting, 47'10" span, Motors 220/3/60  
50 ton Shaw, 46'8" span, Motors 440/3/60  
7 1/2 ton Bedford, 50' span, Motors 220/3/60  
15 ton Bedford, 50' span, Motors 220/3/60  
20 ton Morgan, 42' span, Motors 220/3/60  
20 ton P. & H., 50' span, Motors 220/3/60  
15 ton Champion, 51' span, Motors 440/3/60

## CRANES—D.C.

35 ton Northern, 29' span, Motors 220 volt DC  
30 ton Niles, 34'8" span, Motors 220 volt DC with two hoisting hooks  
5 ton P. & H., 37'9" span, Motors 220 volt DC  
7 1/2 ton P. & H., 38'8" span, Motors 220 volt DC  
5 ton Shaw, 40' span, Motors 110 volt DC  
25 ton Niles, 40' span, Motors 220 volt DC  
10 ton Morgan, 42' span, Motors 220 volt DC  
15 ton Whiting, 42' span, Motors 220 volt DC  
10 ton Morgan, 48'4" span, Motors 220 volt DC  
15 ton Shepard, 50' span, Motors 220 volt DC  
5 ton Alliance, 50' span, Motors 220 volt DC  
15 ton Bedford, 50' span, Motors 220 volt DC  
25 ton Morgan, 50' span, Motors 220 volt DC  
20 ton Shaw, 55' span, Motors 110 volt DC  
10 ton Cleveland, 58'2" span, Motors 220 volt DC with two 5 ton Trolleys  
15 ton Morgan, 60' span, Motors 220 volt DC  
10 ton Cleveland, 58'2" span, Motors 220 volt DC with two 5 ton Trolleys  
25 ton Morgan, 65' span, Motors 220 volt DC 500' outdoor runway  
25 ton Morgan, 65' span, Motors 220 volt DC with smaller auxiliary hoist  
25 ton P. & H., 65' span, Motors 220 volt DC with 5 ton auxiliary hoist  
20 ton Shaw (2), 66'11" span, Motors 220 volt DC with or without runway  
10 ton P. & H., 70' span, Motors 220 volt DC with 3 ton auxiliary hoist  
40 ton Niles, 71'11" span, Motors 220 volt DC with 5 ton auxiliary hoist  
5 ton P. & H., 77' span, Motors 220 volt DC  
20 ton Alliance, 80' span, Motors 220 volt DC mounted on runway 320' long. Has two 10 ton trolleys

## FORGING MACHINES

2 1/2" 4" 5" Ajax, New Model Machines  
2" 3" 5" National, Steel Frame  
7" Ajax, Steel Frame

## PRESS—HYDRAULIC

1200 ton Southwark Four Column, 48"x60" between columns. Slip Ring Motor Drive direct connected to Triplex Hydraulic Pump. Complete with Intensifier. High Pressure Piping and Valves

## ROLLING MILL EQUIPMENT

4"x25" Torrington Single Stand. Two High Cold Rolling Mill, Motor Driven  
8 1/2"x19" Belgian Three Stand. Two High Train Cold Rolling Mill, Arranged for Motor Drive  
9"x10" Columbia Two Stand. Two & Three High Rolling Mill, Arranged for Motor Drive  
9"x14" Cramp Single Stand. Two High Rolling Mill  
9"x14" Columbia Two Stand. Two & Three High Rolling Mill, Arranged for Motor Drive  
14"x24" Hill Clutch Co. Two Stand. Two High Cold Strip Mill, Arranged for Motor Drive  
15"x23" Waterbury Farrel Single Stand. Three High Rod Mill, Motor Driven. Capacity Round Bars 1 1/2" dia. down to 3/8" dia.  
20"x30" Birmingham Two Stand. Two High Sheet Mill  
20"x26" Two Stand. Two High Strip Mill, Motor Driven

## SHEARS—ALLIGATOR

No. F-6 United Engr. & Fdry. Co. High Knife, Motor Driven. Capacity 5" Square  
No. F-7 United Engr. & Fdry. Co. High Knife, Motor Driven. Capacity 6 1/2" Square

## SHEARS—GUILLotine TYPE

Garrison Bar Shear, Arranged for Motor Drive. Length of Blade 19 1/16". Capacity 5" Rounds  
Fisher Fdry. Co. Bar Shear, Arranged for Motor Drive. Length Blade 22". Capacity 1/2" thick by 15" wide hot steel

## SHEARS—SQUARING

72" Long & Allstatter, Arranged for Motor Drive. Capacity 14 ga. Spring Holdowns  
90" Bertsch, Arranged for Motor Drive. Capacity 10 ga. Spring Holdowns  
126" Stoll, Belt Driven. Capacity 10 gauge Spring Holdowns

## SHEAR—ROTARY

Bliss, Belt Driven. Capacity 1/4" Plate  
No. 6 Quickwork. Motor Driven. 48" Throat. Capacity 1/4" Plate

## SLITTER

G-26 Toder, Motor Driven. Equipped with automatic counting attachments and complete sets of slitting knives

**RITTERBUSH & COMPANY, INC., 30 CHURCH ST., NEW YORK, N. Y.**

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## BORING MILLS

1—No. 1 and No. 2 Barrett Horizontal  
1—6" Espen Lucas Horizontal  
1—12" Niles Vertical, M.D.  
1—10-18" Betts Vertical, M.D.  
1—64" Bullard Vertical  
1—72" N-B-Pond Vertical  
1—62" N-B-Pond Vertical  
1—53" N-B-Pond Vertical  
1—60" Colburn Vertical  
1—60" Cincinnati Vertical  
1—48" Colburn Vertical  
1—30" Bullard Rapid Production

## LATHES

1—100" x 50" N-B-Pond, M.D.  
1—65" x 32" Sement-Miles Heavy Duty  
1—30" x 28" Lodge & Shipley  
1—30" x 15" Houston-S-Gambel  
1—26" x 20" Sidney, Geared Head

## PLANERS

1—84" x 84" x 18" N-B-Pond, M.D.  
1—72" x 72" x 12" N-B-Pond, M.D.  
1—48" x 48" x 18" Cincinnati, M.D.  
1—42" x 42" x 22" Cincinnati, M.D.  
1—36" x 36" x 14" Gray, M.D.

## GEAR CUTTERS

1—72" Cincinnati Type G Cutter  
1—100" Gould & Eberhardt Hobber

## GRINDERS

1—40" x 20" Landis Heavy Duty Plain  
1—No. 24 Gardner Disc  
1—18" x 84" Landis Plain

## MILLERS

1—No. 3 and No. 4 Cincinnati Plain  
1—No. 3 Cincinnati Plain

## SHAPERS

1—6" Pratt & Whitney Vertical  
1—24" Gould & Eberhardt, S.P.D.  
1—24" American, M.D.  
1—28" Columbia Heavy Duty

## HAMMERS—ROLLS

1—3N Hazel Air Hammer  
1—40" x 1" Southwark Bending Rolls, M.D.

## SIMMONS MACHINE TOOL CORP.

ALBANY, N. Y. New York City, 149 Broadway  
(Write for our latest stock list)

No. 6 Warner Swasey Turret Lathe  
No. 4 Thurston Miller  
No. 31 National Acme Automatic Screw Machine  
No. H-1 Pratt & Whitney Turret Lathe  
2 Spindle Drill Presses  
37 New 10 x 3 Mann Speed Lathes. Bench Type  
16-8 South Bend Engine Lathe Compound Rest  
100 Lb. Automatic Drop Hammer

THE E. A. EDDY MACHINERY CO., INC.  
Eddy and Clifford St., Providence, R. I.

# UNUSUAL TOOLS

Our location in Detroit keeps our Organization in constant touch with the largest selection of machine tools in the world.  
AUTOMATICS, Gridley 2 1/2" Mpls. Spindle (7)  
AUTOMATICS, Cons 1 1/2" M.D.  
FURNACE, Home Electric  
GRINDERS, No. 12 S. & S. Univ. (3)  
GRINDER, No. 2 Cincinnati Univ.  
GRINDER, Pratt & Whitney, Surface, Ball Brg. M.D.  
GRINDER, No. 3 Abrasive, Surface  
GRINDER, No. 78 Head, Internal  
GRINDER, No. 79 Head, Double Spindle  
GRINDERS, No. 72 Head, M.D. Hyd. Feed (3)  
GRINDER, Helm Centerless, M.D.  
GRINDER, Gardner Opposed Type, Auto. Feed, M.D.  
HOBBER, No. 16HS Gould & Eberhardt, S.P.D.  
LAYNE, 30"x10" Reed S.D.  
MILL, 2 1/2" Cleveland Spring, S.M.D.  
MILL, No. 30H Henday Univ. S.P.D.  
OIL GROOVER, Wiece, Into type  
PLANER, 30"x30"x14" Niles-Sement-Pond  
PLANER, 30"x30"x10" Liberty Opposed, Motor Driven with motor, 1 rail head and 1 side head  
PRESS, No. 8D Bliss, Double Crank, Tie Rod, 12" stroke, 19" sh.ht. 34"x60" bol. Twin Drive  
SAW, Thiel No. 3 M.D.  
SHAPER, 20" S. & E., S.P.D., V.M.D.  
SHEAR, 10" 1/2" United Eng's, M.D.  
SHEAR, 10" 1/2" Pittsburgh, M.D.  
SLOTTER, 16" Betts, M.D. like new, latest type  
WELDERS, Spot, Seam, Best  
And a complete stock of up-to-date rebuilt equipment.

## HARVEY GOLDMAN & CO.

Machinery

10567 Gratiot Ave. Detroit, Mich

## OPENSIDE PLANER

72" x 60" DETRICK & HARVEY  
x 18' 3 HEADS  
MOTOR DRIVE

ROSENKRANZ, WEISBECKER & CO., INC.  
140 BROADWAY, N. Y. C.

# AUTOMATICS

For Immediate Delivery

Cleveland 4 1/2" Model "M" 4-Spindle Chucking Machine, M.D. by 10 H.P. 3-60-220.

Cleveland 4-Spindle 1 1/2" Chucking Machine, M.D.

National-Acme No. 56 2 1/4" 4-Spindle.

Gridley 4-Spindle 4 1/2" Automatic Chucking Machine, Model "H", M.D.

1 3/4" Gridley 4-Spindle, Model "F".

2 1/4" Gridley Single Spindle, M.D.

No. 6-A & 5-A Potter & Johnston's.

14" Fay Automatics with back angle attachment.

Many other high grade machines.

## INDUSTRIAL MACHINERY COMPANY

2100-2300 Fletcher Ave., Indianapolis, Ind. Drexel 3300.

## FOR SALE

26" Type C Libby Turret Lathe

4 1/2" dia. hole in spindle, complete with all regular equipment, 15 H. P. motor, belt drive. Used very little, in first class condition. Price reasonable.

THE BROOKS CONSTRUCTION COMPANY  
CLEVELAND, OHIO.

## Victor's Bargains in NEW STRAIGHT SHANK ENDMILLS

High Speed—Spiral Flutes



Diameter	Length of Cut	Length Overall	List Price	Our Price
1/8	5/16	1 1/4	\$1.40	\$ .70
5/32	5/16	1 1/4	1.50	.75
3/16	1/2	1 3/8	1.70	.85
7/32	9/16	1 5/8	1.80	.90
1/4	5/8	1 11/16	1.80	.90
5/16	11/16	1 3/4	1.90	.95
3/8	3/4	1 13/16	2.10	1.05
7/16	7/8	2 3/16	2.30	1.15
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H.P.	Speed	Volts	Make	Price
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5—15 D.C.	500/1000	550 G.E.	.....	290
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1—Rock River Punch 48" Throat, Architectural Jaw. Price..... \$30				
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H.P.	Make	Volts	Type	Speed
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500	G.E.	440	Synch.	1200
450	West.	440/220	Synch.	257
450/300	West.	2200	CW-Slipring	875/700
400	West.	2200	CW-Slipring	290
400	G.E.	4150/2300	MT-Slipring	390
400	West.	2200	CW-Slipring	514
300	Al. Chal.	2200	ANY-Slipring	585
300	West.	440/220	CW-Slipring	1800
250	G.E.	4000/2300	MT-Slipring	257
250	CR. WH.	440/220	128Q-Slipring	435
250	West.	440/220	CW-Slipring	685
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1—10 Ton P & H	3 " 37'-11 1/2"	" " 829
2—10 Ton P & H	3 " 32'-7 1/2"	" " 828
1—10 Ton P & H with 3 Ton Aux.	4 " 26'-0"	" " 1134
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<b>SPECIAL A.C. CRANES 220 Volt</b>		
1—Milwaukee 20 Ton	4 Motor	
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14 "	36 x 120	15,800
14 "	48 x 96	12,800
14 "	48 x 120	10,200
16 "	36 x 96	10,300
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16 "	48 x 96	15,500
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Procurement Division, Public Buildings Branch, Washington, D. C., July 29, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., Aug. 31, 1937, for construction of the U. S. P. O. at Dover-Foxcroft, Maine. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of \$5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Assistant Director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch.

Procurement Division, Public Buildings Branch, Washington, D. C., Aug. 6, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., Sept. 8, 1937, for construction of the U.S.P.O. at Fayetteville, W. Va. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of \$5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Assistant Director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch.

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Procurement Division, Public Buildings Branch, Washington, D. C., Aug. 10, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., Sept. 14, 1937, for construction of the U.S.P.O. at Belleville, Kans. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of \$5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Assistant Director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch.

Procurement Division, Public Buildings Branch, Washington, D. C., July 30, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., Sept. 10, 1937, for construction of the U. S. P. O. at Shelton, Wash. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of \$5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Assistant Director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch.

Procurement Division, Public Buildings Branch, Washington, D. C., Aug. 6, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., Sept. 9, 1937, for construction of the U.S.P.O. at Wayne, Mich. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of \$5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Assistant Director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch.

Procurement Division, Public Buildings Branch, Washington, D. C., Aug. 6, 1937.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., Sept. 7, 1937, for construction of the U.S.P.O. at Port Washington, Wis. Upon application, one set of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of \$5 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Assistant Director, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Assistant Director of Procurement, Public Buildings Branch.

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